JOURNEY OF INNOVATION

Case Study
Changing Perceptions of the Value of Driver Safety

A project submitted to Middlesex University in partial fulfilment of the requirements for the degree of Doctor of Professional Studies

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Abstract

With the continuing growth of online shopping in the UK, there has been an equivalent rise in the numbers of van fleets to complement demand. This steady increase has led to an acknowledged need in the industry sector to evaluate and improve the effectiveness of at-work road safety initiatives. Key to the design, implementation and evaluation of such initiatives, and to creating a workplace culture of driver safety, is a greater understanding of the behaviours and attitudes to risk of professional van drivers and how to monitor, assess and consider ways of influencing these proactively and effectively. The current study sought to investigate driver attitudes and behaviours to risk within a major retail online delivery service in which I am employed, Tesco Dot.com, as part of a wider set of interventions designed to inform the company workforce of developments, policy and practice in this area. Researching from an insider practitioner-manager perspective, I used a longitudinal case study approach to explore the role of innovative technologies for driver safety, allied with concurrent workforce development and training programmes. Using a mixed methods approach to data collection and analysis, I combined qualitative data from staff interviews and quantitative data from internal data sources, together with reflections on my changing role and developing influence within the team, to build up a rich picture of the challenges of fostering innovation and change from the inside, particularly in a discrete part of a complex, rapidly changing retail industry. As a result of ongoing evaluations, I formulated a number of medium and longer-term recommendations about the early implementation of company strategies, including recruitment and retention for drivers, strategies for addressing barriers and enablers to the rollout of proposed technologies, and formulated proposals for organisational reconfiguration to embed a culture of driver safety more securely within the company workforce.

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Glossary

ABC	Accept nothing, Believe nothing, and Challenge everything
ARB	Accident Review Board
ADI	Approved Driving Instructor
DRIVERS	Customer Delivery Assistant
DFBB	Driving for Better Business
DFT	Department for Transport
DSA	Driving Standards Agency
DTFR	Department of Transport for Regions
FT	Fleet Trainer
HC	Highway Code
HSC	Health and Safety Commission
HSE	Health and Safety Executive
KPI	Key Performance Indicator
KFRS	Kent Fire and Rescue Survice
MORR	Managing Occupational Road Risk
PDI	Probationary Driving Instructor
RoSPA	Royal Society for the Prevention of Accidents
RR	Reality Research
RTA	Road Traffic Act
RTC	Road Traffic Crash
SIIT	Serious Incident Investigation Team
TC	Traffic Commissioners
VOSA	Vehicle Operating Service Agency
WRRR	Work Related Road Risk

Chapter 1 - Introduction

In this chapter l review how my professional knowledge and the way in which I understand my work have been fashioned over many years. I describe the influence of this development on my decision to undertake this Work Based Learning Doctorate project and how it came to be formulated. I also introduce and explain the structure of this Work Based Learning Doctorate thesis and my associated practice.

Working as a driver safety practitioner for many years, I have gained a comprehensive and in-depth knowledge relating to practical training and the strategic development of teams, as well as processes and policies that seek to create change within the workplace. Here I outline some of the factors that have informed this understanding, prompting my interest in developing these skills further within the company I am currently working in. I started work at Tesco Dot.com in 2005 at a time when I was already studying for a work based learning degree in driver education. As my role within the company changed from an external contractor to an employee training manager, so my degree shifted focus and I finally obtained a first-class honour in BS Occupational Road Risk in 2010 and was awarded 'Student of the Year'.

Gaining my degree gave me the knowledge, confidence and status to raise queries I had relating to the operation at Tesco Dot.com and I started to communicate concerns about the robustness and structure of some of our legal compliance processes and procedures to my line manager. In response he asked me to conduct a review relating to health and safety, driving standards, law and operational effectiveness both on the road and within the company with the aim of identifying improvements that could be made. I was particularly interested in shift structures, route planning and fuel-efficient driving. This request provided the opportunity to combine my academic interests and workplace-related professional knowledge to pursue the focus that would become this Work Based Learning Doctorate project.

Carrying out the Work Based Learning Doctorate in relation to this review allowed me to gain insights, as both a researcher and a practitioner, into the processes and events that could either facilitate or complicate the goal of improving this particular area of driver safety at Tesco Dot.com. It enabled me to consider how far the company had come in protecting the safety of its drivers, how it could further consolidate and improve these safety record achievements, as well as the role I could play to support and, in part, determine these goals as an agent of change working within the organisation. Having spent most of my professional life working within the world of professional driver education and providing consultative services to several areas of industry, in the first five years I was sceptical that

Tesco, Britain's biggest retailer, would be able to embrace the ideology and methodology required to reach a best practice level of safety within a rapidly growing driver population. This thesis charts the shift in this scepticism starting with the beginning of the research in 2010; a journey that has also been one of self-discovery as outlined in this investigation.

1.1 The Aim of this Study

My main aim in this study is to investigate selected processes of innovation and change within Tesco Dot.com and it's my sphere of influence, particularly in relation to the delivery of strategies for workforce development and specifically about company training programmes designed, among other things, to improve driver safety and eliminate risk. I will explore and document key aspects of a journey of organisational, professional and personal change that l embarked on over approximately the last eight years (2008 to 2016). I capture and analyse the impact of changing relationships within core areas of Tesco Dot.com, focusing on a particular case, which considers the nature of innovation and change from the perspective of someone actively involved in the task of finding ways to initiate, support and steer that change, including during phases of uncertainty and major organisational change Smith (2016).

To a large extent the case study presented in this research is the evaluation of my own work practice and is bound by the methodologies that I have developed from within this setting, meaning that I assume the role of both researcher and the subject of research, rather than taking a third-party perspective. Given that my roles and responsibilities have also changed as the case has unfolded, this is also, to some extent, in relation to the development of my own sense of agency as I have moved towards a position of greater managerial responsibility. Accordingly, I intend to document some of the organisational and personnel changes that have taken place, which have repositioned me from a situation of comparative isolation within the case described to being a more valued member of a team, assessing it from within. I also outline my increasing influence outside the organisation in terms of external consultancy to the wider industry and the support I have provided to developing countries via Eastern Alliance for Safe and Sustainable Transport (EASST).

The case study will look at the systems and processes that l have helped introduce within Tesco Dot.com, exploring the methodology behind their design and the impact they have had to date on the personnel and operation of the company. I investigate a range of specific and more generic issues and questions ranging from the feasibility of change in relation to internal and external factors, to the goals, impact and measurement of change, and the sustainability of change.

Questions that guided my initial thinking included the following:

- Could a positive change in behaviour be achieved?
- Could operational costs be reduced, and safety standards raised?
- What was the impact of the Driver Safety and Compliance team?
- Why did we introduce telematics into the Tesco Dot.com van fleet, what were the subsequent challenges we faced due to the data collected, and what was the response of the drivers?
- How do you embed change?
- What were the internal challenges faced by a rapidly growing business in an environment that is perceived as unregulated?

1.2 31 Years in Road Safety

Since leaving secondary school in 1979, l have found myself constantly drawn to the field of training and development, not through academia, for example through teaching in the compulsory and post-compulsory sectors, but through practical hands-on training within the working environment. My working life started at age 16, some 38 years ago, with the Royal Mail, which demanded an early 4 a.m. start as well as a determination to learn new skills while combating the elements. Unfortunately, l sustained an industrial injury resulting in 12 months of hospitalisation. This, however, was the catalyst to my single-minded determination to never give up on a task once I had accepted the challenge. I first adhered to this motto when I learned to walk again, which also led me to start practising karate in order to regain the strength, coordination and balance in my legs. I have found that unintentional major events in my early life helped mould my character, developing clarity and doggedness to identify what is required to embed change and the fortitude to help develop and mould positive adjustments.

Working as I do currently, after a long and varied career, within a large multi-national company such as Tesco, l have been faced with many challenges with regard to my determination to keep on what I see as a ‘correct path’, that is, one that helps people reach their goals with commitment and integrity. Tenacity has been a close friend to me over the years, but I recognise that self-determination alone will not guarantee success. A combination of skills, knowledge and beliefs are required to enable a person to set and achieve goals, and skill sets are developed from an understanding of one's strengths and limitations, together with the belief in oneself as capable and effective. The personality job fit theory postulates that a person's personality traits will reveal insight as to adaptability within an organisation Gagne (2005).

For instance, I first developed the ability to teach and train others in 1982 with my involvement in the martial art of Karate-Do-Shotaki, firstly as a trainee, then moving on to becoming an instructor within a local club and ultimately moving to Newcastle to train at the world renowned Chowa Karate Academy under the tutorage of Mitsusuke Harada. This activity was the first to inspire me to research a subject by examining its history and in this case its religious dimensions (Japanese Shinto), together with its cultural influence on Western thinking and behaviour, particularly in the US Funakoshi (1973).

This was my first real exposure, albeit subconscious, to the process of reflecting on literary knowledge (often in translation) and imparting this to others firstly in theory and then in practical application. This, in turn, led to a wider subsequent interest in training, assessing and the accreditation of individuals' abilities. The personal learning that l was able to extract from this period of my life was that the desire to fulfil one aspiration will undoubtedly take you on a journey that at times you will have little or no control over and that may produce other unexpected outcomes. Due to my Karate-Do-Shotaki training I took decisions that would make fundamental changes to my life, such as where l lived. The training also caused more perceptual changes such as my view of society and my part within it. On reflection, it cemented the underlying values that have moulded my approach to my professional work and the ethics that fortify my approach to this work (which I touch on throughout the project). This short intervention in my life started to shape the attitude and approach that helped frame my development as a trainer.

My fundamental starting point in this project, derived from and tested in the workplace, is that for effective change to happen you must think systemically as well as individually. This thinking takes place in relation to the task or output, and at times, though with care and tact, requires acting on the courage of your convictions to challenge the status quo. You must first reflect on the group and what helps it to function effectively to allow the kind of improvement and change to take place that is both accepted and aspired to by the broader workforce. My efforts to gain acceptance and recognition of this tenet have been key for understanding my development as an agent of change. This issue came into sharp focus when l first joined Tesco Dot.com and introduced a pre-employment driving assessment for our drivers. The response from management was: 'Why? As long as they have a licence then they can drive our vans. It's not necessary'. The focus appeared to be on the smaller picture and on the needs of individual drivers in isolation. The fact that company data showed that van damage and prosecutions were growing at an exponential rate was deemed of little or no consequence. There was hence an initial barrier of communication or at least a clash of perspectives and basic assumptions, which I would need to negotiate

and continue to work around as I progressed in terms of my role and potential influence within the company.

The ability to communicate across multiple levels, working on a one-to-one basis or in a group situation, by motivating, consoling and mentoring simultaneously, is a skill in its own right. One of the contributory aims of this project was to explore the extent to which I was able to move from a position of relative outsider within the management structure, with a circumscribed capacity to influence others (especially upwards and sideways), to one where I am increasingly acknowledged as having the skills and experience to input into enhanced evaluation and decision-making activities at a more strategic level.

1.3 Driver and Vehicle Safety Agency Approved Driving Instructor

Having sketched some of the wider strategic issues, here I touch on some key aspects of learning and training, the understanding and questioning of which has been a constant theme throughout my life. The movement in my thinking is important to grasp as it has influenced the kind of instructor I became early on in my career and later at Tesco Dot.com. I have been working in the industry of professional driving instruction and development for over 30 years, developing my skills and experience from working as a sole trading driving instructor starting my own business in 1985, through to the development of my own consultancy company, Roadwise Training and Consultancy in 2000 and then joining Tesco Dot.com in 2005.

When l left full-time Karate training and qualified as a driving instructor I was able to develop my existing skills and reflect on their influence on my teaching in related, professional contexts. I was able to bring a new dimension to that of a traditional driver trainer by utilising my Karate instructor skill set, such as the approach of using incremental steps to achieve a positive result, but not moving forward until the student is capable and competent at each stage. The success of this strategy has been supported in the work of Schon in The Reflective Practitioner: How Professionals Think in Action (1991).

Competency-based learning or competency-based education and training Burke (1989) is a pedagogical approach more often used when developing concrete skills rather than abstract, theoretical learning. It is usually situated in the work context and it differs from other approaches in that the unit of learning is extremely fine-grained. Rather than deliver learning through a course or a module-based curriculum, every individual skill/learning outcome, known as a competency, is one single unit. Learners work on one competency at a time, which is usually a small component of a larger learning goal. The student is evaluated on the individual competency and only once they have mastered it do they move

on to others. After that, higher or more complex competencies are learned to a degree of mastery and isolated from other topics. Another common component of competency-based learning is the ability to skip learning modules entirely if the learner can demonstrate they already have mastery. This can be done either through prior learning assessment or formative testing.

For example, people learning to drive (DfT, 2008) using manual transmission might first have to demonstrate their mastery of the rules of the road, safety, defensive driving, and parallel parking and so on. Then they may focus on two independent competencies: using the clutch and brake with the right foot along with shifting up and down through the gears. Once the learners have demonstrated they are comfortable with these two skills the next, overarching skill might be finding first gear from full stop moving into a slow roll followed by sudden stops, then shifting up and downshifting gears. Because this is kinetic learning, the instructor would likely demonstrate the individual skill a few times, then the student would perform guided practice followed by independent practice until they can demonstrate their mastery (Spady *et al.,* 1977). In my experience, all too often driving instructors mistakenly think that explaining the steps involved verbally by telling the learner how to correctly perform a skill or procedure is enough to promote adequate learning and that any deficiencies in learning or demonstrating the competencies required are due to the learner, not the method.

Over time l became aware that l had an ever-deepening awareness of the kinds of effective, individually tailored methods of teaching and learning needed to enable drivers to achieve and maintain a high standard of safety, and a corresponding dissatisfaction with alternative methods such as working through a specific training programme irrespective of the individual needs of the student. I introduced an assessment of these skills using competency-based learning, allowing my students to achieve the highest standards, reflected both in the qualifications they attained as well as the qualifications awarded to me by the Driving Standards Agency. In addition, I received training contracts from local authorities and NHS ambulance trusts to work with their employees (see section 1.4). The agencies commented that this training and the informational material supplied produced a high-quality product. Furthermore, they described how the training not only developed competency within their existing frameworks, but that I had begun to influence change within the organisation as the resulting benefits of my methodology became tangible over time.

1.4 Training Consultant

My first major step into management was in 2000 when l successfully tendered for the award for providing and developing driver training services within Kent Ambulance NHS Trust. This was my first experience of collaborating with chief executives and working with the development of strategies and costings. It was during this six-year period between 2000 and 2005 that l was actively involved with county councils and large fleet-training companies, undertaking a similar consultative role. In addition to this, l undertook an active role in St John Ambulance, both as a member and a driver trainer.

On reflection, this was where l discovered how unwieldy and fragmented large organisations could become and the underlying conflict between maintaining high levels of perishable skills and fiscal accountability, particularly in the private sector. I was able to analyse the needs of a training department with regard to strategy and planning, and the positive impact that this would have on both the company and the public that it served. Insurance companies now widely recognise that higher standards of driving are a fundamental contributor to the reduction of accident rates, improvement in fuel economy and reduction of carbon emissions (Roadsafe, 2012).

Whilst conducting this work I concluded that to effect positive change within an organisation, you must persuade departments and managers that may have different agendas that the proposition that you are bringing to the table is beneficial and worth them investing in, as substantiated in (Fisher *et al*., 2011) Getting to yes: Negotiating agreement without giving in. This would often lead to a conflict of interest either through existing perceived edicts being challenged or a proposition being created whose potential benefit the company managers were either unable or unwilling to see.

Organisations whose internal workings I have become familiar with tend to foster an ingrained way of thinking and behaving, so-called ‘mental models’ (Senge, 1990) which are reflected in micro-managing, a concept that Tesco in my experience would appear to have as part of its DNA. I am aware that a successful, large company such as Tesco would feel that it has the skills and knowledge already existing within the company, so would instinctively be sceptical of ideas perceived to originate from an external source. If you are perceived as an outsider coming in with new ideas, effecting change can be very difficult.

When l originally embarked on my final project in 2011, my proposed study within the context of my own organisation, Tesco Dot.com, was entitled *The Role of Risk Databases in Safety Training for Professional Van Drivers*. I envisaged a project where the implementation of a single new technology and system of monitoring would act as a sufficient frame to explore

the kinds of interest in facilitating organisational change and its associated work based learning strategies that were my central and ongoing concerns. On reflection during the initial stages of the project, l realised that the Tesco Dot.com database, an off-the-shelf product supplied by DotNetNuke was not, in essence, a risk indicator, but a storage facility for tracking training events and historical data relating to our drivers. As such it was unlikely, by itself, to provide the scope for the more radical and more involving inquiry I had in mind.

The existing database did fulfil certain expectations, including our director's desire to fulfil corporate accountability and the legal responsibility that is duty of care, charting adequate training to undertake the job role. However, the database, as I came to discover, was not fully fit for purpose and certainly did not meet my own initial expectations. Upon investigation, I found that it lacked the ability to amalgamate data streams and internal reports associated with our drivers' behaviour to form an overall score or picture to support interventional or targeted training. A second and equally important product of such a risk-profiling model would be the development of better training and support for the drivers. Therefore, the kind of systemic and evidence-based training programme it had the potential to support was well below what I had envisaged.

Risk management software works by identifying the risks associated with a given set of assets and individuals, seeking to mitigate or eliminate these risks Karolack (1995). The risk management database in operation at Tesco Dot.com, which should have been linked closely with compliance management and optimally designed to lower the overall risk and security implications that the organisation faces, did not in practice fulfil these vital functions. Consequently, the database, as my colleagues and I discovered, lacked credibility as a decision-making and auditing tool. Its lack of functionality included data entry and collection, given that some of the content itself had become corrupted or omitted over time and had not been audited. The fact that the organisation did not audit standards in relation to risk management databases provided me with an opportunity to undertake a service improvement while carrying out a piece of work based research.

With this in the forefront of my mind, and with support from Middlesex University and my advisor, l decided to construct a case study concentrating on the introduction of information technology and innovation designed to improve and change the behaviour of Tesco Dot.com drivers. This study would focus on the initial stages of the implementation. I had chosen by then to move from a stage-by-stage conception of the innovation process to a more dynamic, continuous approach in which the variables involved are sequenced and analysed through time (Van de Ven and Huber, 1990).

1.5 Tesco Dot.com and My Changing Roles in the Company

Throughout Tesco Dot.com's remarkable expansion over the last 23 years, increasing from one van to 5,500 delivering to 1.7 million customers per week, the senior management team has analysed its processes and developed innovative management solutions to allow the business to grow in a robust, controlled and sustainable fashion. The guiding principle has been to ensure that profitability was achieved while ensuring that Tesco Dot.com's employees were fully consulted and able to operate in a safe environment. At the end of 2004, however, van damage had reached a level of over £5,000 per van per year (a total of £10 million). It was clear that prompt and decisive action was needed to reduce the exposure of Tesco Dot.com staff (outreach workers) to occupational road risk, whilst executing a business plan to reduce and bring under control the spiralling costs of running, maintaining and insuring the van fleet.

In 2005, at the same time as I joined the company, a consultation process regarding the employment, training and development of drivers, initiated by the senior management team in conjunction with the trade unions, was undertaken. The output of the consultation was an action plan that clearly defined the policy and strategy that would allow radical changes to take place throughout the business to improve driver safety and legal compliance, without unnecessary delay or misunderstanding by participating major stakeholders. This fundamental move laid the foundations for the development of Tesco Dot.com's in-house driver safety team and the resulting development programme that radically changed the focus and commitment that the company had towards its van drivers.

Tesco Dot.com is now in a position to reap the rewards from its investment in its staff and operational hardware. The company can now move forward and grow on a more stable footing, but the struggle to maintain and improve behaviour and safety standards remains ongoing, requiring the support and development of a carefully crafted combination of highly trained and motivated staff and of cutting-edge technology such as telematics data tracking and in-cab cameras. Tesco Dot.com is now recognised by both Government agencies and our industry sector to have benchmarked and raised the bar in managing the occupational road risk of its outreach workers, and Tesco Dot.com's strategies and processes are those to be aspired to, both in the UK and beyond.

Tesco Dot.com was set up in 1984 in order to respond to what was then forecast to be a growing demand for online ordering from customers and home delivery of purchases. This was a prescient investment because two decades later, the number of vans on the road in the UK delivering online purchases had risen dramatically. Vans are the fastest-growing traffic segment in the UK, with 70% growth in road miles over the last 20 years, compared

to 12% for cars and 5.5% for lorries. Data from the Society of Motor Manufacturers and Traders (SMMT) also shows that in 2016, a total of 4,007,331 vans were in use on UK roads, a 4.3% increase from the previous year. A continuing increase in demand for online deliveries has been a key to this inexorable growth and vans now cover around 45 billion miles across the UK each year (SMMT, 2016).

Organisational and economic consequences of this increase in road traffic include the impact on road safety management and associated costs. After 21 years of operation, in 2005 Tesco Dot.com had incurred an escalation in accident damage costs (approximately £10 million) and realised that action was needed to reduce this outlay. The company was spending over £10 million on van damage alone on its fleet of 1,200 vans, virtually off-setting any profitability within the company. As part of the company's strategy to improve road safety, reduce or eliminate risk and improve profitability, I was employed in 2005 as a consultant driver trainer to support and develop an internal staff training team. A significant part of my role was to help move our drivers away from the image and mentality of the 'white van man', with its acceptance of risk as part of the job, to that of being risk-aware, safe and professional employees, delivering great customer service while driving to a high standard.

Currently, I am the company's occupational road risk manager and it is now my responsibility to structure the strategy and policies of Tesco Dot.com with regard to this area. As a comparatively new company, trading for only 21 years, increasing from a single van to its present 5,500 vans and an annual turnover of approximately £2 billion, the structure of the organisation is constantly evolving. My responsibility is to continually monitor Tesco Dot.com's on-road operation for legal robustness. Moving to larger seven-tonne vans in 2015 caused a major impact on the company, resulting in a comprehensive redesign of all training material for more qualified drivers. This also required my registering Tesco Dot.com in 2015 as a Continued Professional Competence company with the Driving Standards Agency. This has been a major undertaking for me professionally as well as being a big move for the company.

As explained, however, I was initially recruited as a trainer, although within six months I started to become my line manager's strategic advisor regarding the safety of our drivers and vans. While within Tesco Dot.com there were retail skills and knowledge in abundance, there was no tangible knowledge within the leadership team regarding occupational road risk.

I have been responsible for entering the company for several awards and have been a major contributor to the following:

- RoSPA Managing Occupational Road Risk 2007, 2009, 2010, 2011 and 2013
- European Road Safety 2010 (large organisation)
- Prince Michael of Kent International Roadsafe Award 2010

Tesco Dot.com is positioned as the biggest online home shopping company in the world, boasting 49% of the UK market, delivering to over 1.7 million active customers (as mentioned previously), with 50 million orders a year (731,000 per week), and 15,000 drivers covering over 120 million miles per year with our home delivery fleet of vans. Tesco Dot.com now has an annual turnover of £2.8 billion. It should be noted that the work we have carried out within Tesco Dot.com associated with these awards has been above and beyond what is legally required of the company. Rather than such awards, the driving force of our work in this area has stemmed from adopting systems compliant with the duty of care outlined in the Health and Safety at Work Act.

One of the challenges for me has been to introduce systems and processes which drive up standards while changing mindsets at both strategic and operational levels. That is, to shift perceptions within the company that such systems are onerous and unnecessary, and to alter the industry standard perception which, at its most stereotyped, suggests that anyone with a car licence can drive a van, that van driving is easy and that the supply of drivers will always outstrip demand. Within the industry of online shopping and the delivery medium of vans there lies a toxic fusion of, on the one hand, the desire of companies to meet the immediacy of online shoppers' expectations and, on the other, their desire to grow at an exponential rate through more vans and more drivers with little regard to environmental or safety impacts. That said, since l joined Tesco Dot.com our drivers have covered over 800 million miles and have not caused one blameworthy fatal road traffic crash, a fact in which my colleagues and I take great pride.

The journey that l have undertaken with Tesco Dot.com has afforded me an illuminating insight into the difficulties and dilemmas of embedding change in one of the country's biggest employers. As previously explained, part of my study will be to reflect on and analyse the range of roles and responsibilities I have undertaken that have helped to contribute to this positive and, I hope, sustainable improvement in risk management and organisational performance by embedding a culture of road safety into the company. In the following section, I outline some of the wider political, economic, social and technological factors that have shaped the context in which I work.

1.6 Political, Economic, Social and Technological Factors

1.6.1 Political

In 1990 the World Health Organisation ranked road death as the ninth greatest killer in the world, predicting that it would be the third by 2010. The Dyke Report (2001) evidences the UK Government's joint strategy with the European Union to reduce road death in general by targeting high-risk road user groups. One of these groups includes at-work drivers, who account for 1 in 3 road deaths in the UK (2010).

The road haulage industry in the UK is closely monitored and controlled by both EU and UK driving regulations, with reference to all large goods vehicles weighing over 3.5 tonnes. These clearly state driving and rest times applicable to the driver and the behaviour of a transport company. However, the industry of operating light vans in the UK (2.2 to 3.5 tonnes) is regulated under UK domestic driving hours (Transport Act 1968, DVSA review 2016), which states shift lengths, implies best practice and is rarely enforced. A self-employed van driver can potentially drive as many hours as they like.

1.6.2 Economic

As a consequence of the rapid expansion of internet shopping in the UK over the last ten years, goods purchased are delivered predominantly via light van fleets, the number of which are present on the roads having grown by 53% during this period. A new and rapidly expanding van driver population has received no additional driver training or up-skilling. Over 4 million vans are being driven by car drivers with potentially little or no professional regard to their own driving skill level or behaviour.

Given that this growth in activity has taken place so far within a largely unregulated industry, questions must inevitably arise as to the impact this expansion in van delivery, including light van delivery, will have on the risks and incidence of road death and injury, both for the workforce and the general population.

1.6.3 Social

With the sudden increase in the van population in the UK, the growth in traffic has had a negative impact on society. As the majority of deliveries are to domestic addresses the increase in local traffic, particularly on housing estates, has greatly expanded. There is also a perception that van drivers are aggressive road users.

1.6.4 Technological

Over the last ten years, there has been a huge investment in the technology involved in the Tesco Dot.com van fleet. The vans themselves are sophisticated eight-speed automatics,

with equally technologically advanced braking and stability systems. The drivers are supplied with an integrated computer that functions as a satellite navigation device, customer service point and mobile phone.

1.7 Tesco Dot.com's Expansion and the Need to Reduce Road Risk

From its inception, Tesco Dot.com has been considered as a bolt-on to an existing store operation, encroaching into the store backyard areas that were never designed with van manoeuvring, parking, delivery marshalling and loading in mind. This background had a discernible effect as the business grew, having an ever-greater negative impact on the safety of both store personnel and Tesco Dot.com staff. The constant positive growth led to the development of Tesco Dot.com only stores, stand-alone operations, which have been built to avert the impact on traditional store operations.

1.8 The Challenge of Reducing Van Damage

In 2006 it was clear that we had no method of data collection to challenge the driver's account of an accident. Figure 1 shows the aftermath of a company-related, non-injury accident dating from 2010, without the influence of alcohol or drugs, so of little or no interest to the police. This incident caused a major road closure in London for seven hours, resulting in criticism from the Metropolitan Police and focusing the need for the introduction of telematic data capture via our provider Microlise, as a pilot in our South London operation. This, in turn, caused a great deal of negativity and suspicion amongst the drivers.

Figure 1 Van crash in South London (closed for seven hours, but with no serious injuries), 2006. Source: Internal Tesco report

At this time the management team had little or no knowledge of what was happening at the ground level of the business. This had several serious and unanticipated consequences. Control of the rapidly growing van fleet had been lost; there was little or no awareness of the condition and safety of our vans. Misguided efforts were made to comply with legalities, but the lack of coordination across the estate linked with the detachment of the office led to over-complicated processes being devised at local levels that were impossible to track centrally.

Three separate books, logs or photocopied sheets were used to cover and track:

- Who was driving the van?
- When the driver was active
- Mileage covered
- Damage that the driver or a third party may have caused to the van during that journey
- Any faults reported to the maintenance provider
- Whether the van had the correct equipment on board

Most of these records were either lost or not filled in: the law states that these documents are kept for three years for inspection by the appropriate authorities, such as the police, in the event of a prosecution or enquiry.

1.9 Consequences of Poor Working Practice

In addition to not completing a daily log, drivers did not check their vans for roadworthiness each day. We were unable to track a van at any given date and time, meaning that we could not confidently declare who was driving when this information was requested by the police or the Driver and Vehicle Standards Agency for endorsable offences under the Road Traffic Act (HMSO, 1988). Common offences included:

- Speeding
- Driving away from the scene of an accident
- Dangerous driving
- Careless driving
- Dangerous parking
- Not wearing a safety belt
- Using a mobile phone when driving (DfT seat belt and mobile phone use survey 2014)

This led to a memorable day in 2005 when a court bailiff arrived at our head office in Welwyn Garden City to collect unpaid fines generated from notice of intended prosecution requests from police forces as a consequence of our drivers' poor behaviour. Unfortunately, no one

within Tesco Dot.com was aware of any fines that had to be paid, as a result of our own poor internal reporting processes. This became a benchmark in our lack of awareness and control of the drivers and the Tesco Dot.com operation at central and local level.

Figure 2 Driver states that, "I was only doing 30mph", 2006, Source: Internal Tesco Dot.com investigation

Figure 3 Result of poor working practices, 2006, Source: Internal Tesco Dot.com investigation

1.10 Compliance with Existing and New Legislation

When I joined Tesco Dot.com, we were unaware of our drivers working an illegal excess of driving hours because we had no knowledge of the correct working hour structure of a van driver, as this is dissimilar to the framework considered normal or safe for staff based in stores. Organisational lack of awareness of legal compliance problems was exacerbated by a prevailing ethos that demanded deliveries had to be made, including if this led to a driver working through the night and into the early hours of the following day. 'Who would know?' and 'does it matter?' were questions that were not discussed when the key and sometimes only concern was making the delivery. The consequences of such unanswered questions had yet to be understood by managers Karolak (2003). This was not a good position for the company and its leadership team to be in, especially after the introduction of the Corporate Manslaughter and Corporate Homicide Act 2007 (CPS, 2008), which raised the real possibility of custodial sentences for company managers and drivers convicted of driving-related offences. At this time the importance of basic equipment, good assessment, training and validation of our outreach workers had still not been registered by managers within Tesco Dot.com.

This changed with the introduction of Excellent Delivery 1, an in-house training day in 2008 attended by all drivers for a four-hour, up-skilling session designed to educate and develop our team as new operational programmes went live in Tesco Dot.com. This training has subsequently been repeated annually in order to refresh the skills of our more permanent staff and to introduce new drivers.

Until the introduction of the Driver Safety and Compliance Team in 2006 and its ability to provide a trusted high standard of training, Tesco Dot.com could not be confident in accurately ascertaining the status of our vans, for example whether all the vans went out on their evening deliveries and if they had returned safely to the store. For instance, one winter's evening the intervention of a member of the public was required to raise the company's awareness that one of our drivers had been found unconscious in his van in the middle of a field late at night. The store was totally unaware that he had not returned from his route. In another worrying incident a manager (seven months pregnant) undertook a delivery route assisted by another member of staff. She drove off with her passenger propped up on an upturned green tray, with a bald tyre and no filler cap, passing directly by a Vehicle Operators Service Authority traffic inspector, while spilling fuel all over the road. After being stopped by the inspector, the van was taken off the road. The inspector then condemned the entire fleet of vans as unroadworthy, thus closing down the local operation completely.

1.11 Costs to the Company

The true economic impact of van damage and related costs in 2004-2005 to a fleet consisting of approximately 1,200 vehicles was a bill of over £5.9 million (approximately £5,000 per van per year), with a further £4.9 million to third parties, totalling £10.8 million. At the time van costs were not tightly controlled or monitored but were run on an open book basis, collated centrally and only reviewed annually as they were expressed as end-of-year cost lines for total spends on:

- Insurance
- Repairs
- Fuel
- Maintenance

This would be visible in the fleet team's annual report, a position that no business could sustain.

By 2016, however, we had a cost of £15.2 million for a fleet of 5,500 vans, making an average cost per van of £2,763: a reduction in overall van damage of 45% (12.6 pence per mile). While the ideal would have been, and is, to incur nil costs per van per annum, the overall steady improvement in reduction of van damage (Figure 4) suggests that the actions and interventions relating to driver safety that I was involved in implementing over the intervening period may well have contributed to this encouraging trend. How, in what seems to have been in a context otherwise resistant to change and new ideas, was it done? My project seeks in part to address this question by bringing to bear my self-reflective understanding of the case and the various sources of data on which this is based. However, let us look first in further detail at some of the other financial and related challenges that Tesco Dot.com was facing.

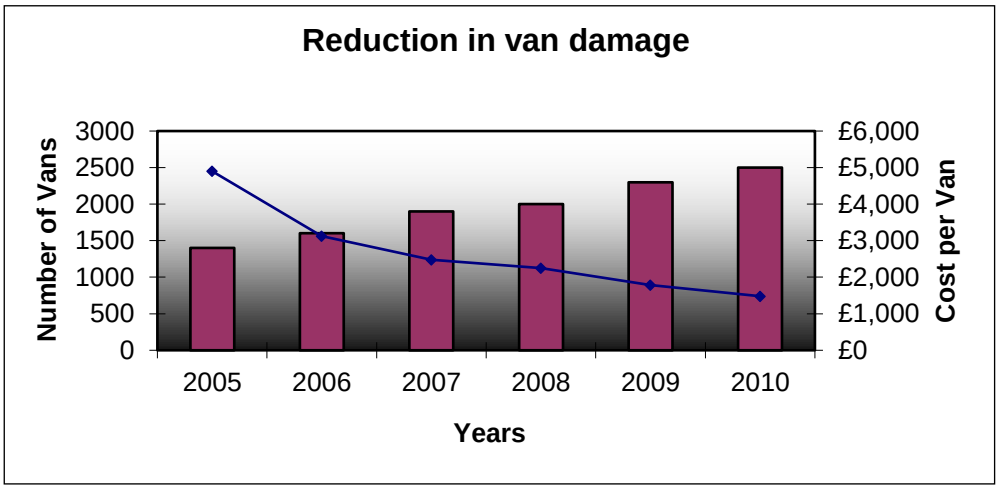


Figure 4 Depicting the fall in van damage costs, 2010, Source: Internal company report

1.12 Labour Turnover 2005 to 2009

To compound our operational problems, labour turnover was running at an estimated 40%, a significant, if at that time hidden, cost to the business.

As shown in Figure 5, it appears there was a pivotal moment in mid-2005 where the turnover of drivers seemed to drop considerably compared with increasing recruitment. This coincided with the inception and development of the driver training team, which has been linked to a marked positive impact on labour turnover. Unanalysed subsequent data indicates that this trend continues to the present day.

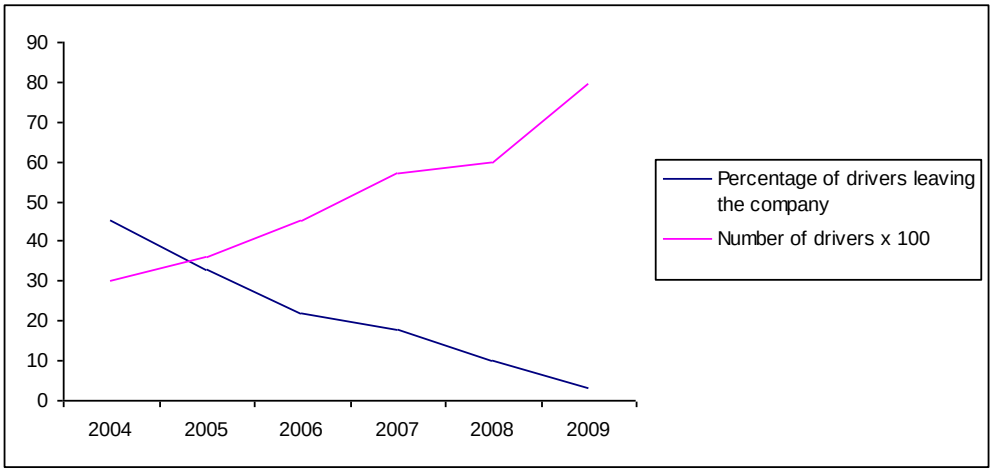


Figure 5 Depicting growth of drivers to over 8,000 and drivers leaving the company reducing to 5%, Source: Internal Tesco Dot.com report

The impact of the driver safety and compliance manager (DSCM) is depicted in Figure 6 where the constant increase in van numbers is clearly offset by the rapid fall in van incidents.

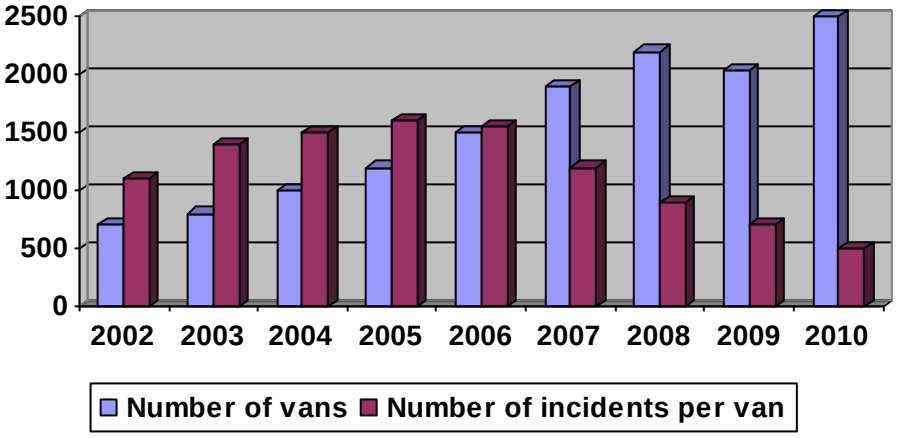


Figure 6 Number of accidents (involving personal injury and or vehicle damage) over the last eight years (when I took on the DSCM role), 2010 Source: Internal company report

1.13 Improving Operational Safety

An unfortunate result of the continued growth of Tesco Dot.com has been the congestion in backyard areas of Tesco stores during key strategic operational times of the day. The safe marshalling and loading of vans is an ongoing problem (Figure 7) and this is exacerbated by the need for vans to be plugged into a safe electrical supply to achieve proper temperature reduction in the fridge and freezer sections of the van. The problem becomes critical during the Christmas trading period.

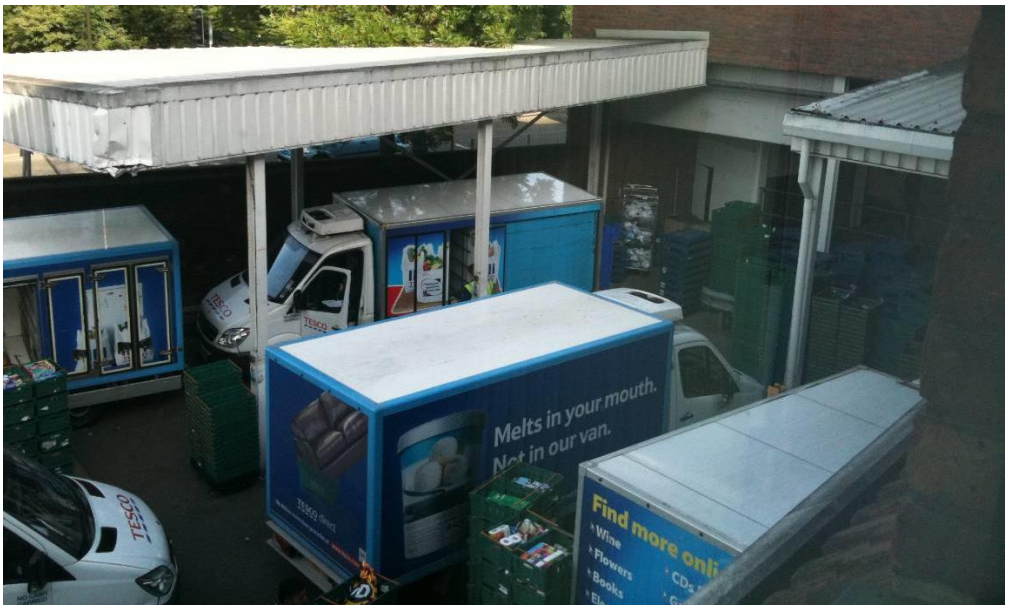


Figure 7 A common sight during the morning loading of vans, (2010),
Source: Internal company report

A comprehensive review of the safety of backyards was undertaken in 2010 by the DSCM team (refer to Figure 8 and Figure 9 where risk can clearly be identified), but in certain locations, the congestion in this area is still a concern. In addition to loading the van, the backyard is the area where cleaning and maintenance of the vehicle are usually carried out. The safe overnight parking of the vans had become an additional concern, with vandalism and, particularly recently, the theft of catalytic converters at a cost to the business.

Figure 8 A typical Tesco Dot.com loading area in 2010, growth had compromised safety, 2010, Source: Internal company report

Figure 9 The difficulty of providing a safe working area at key periods of the day, 2010. Source: Internal company report

1.14 Project Structure

This Work Based Learning Doctorate research uses a case study in order to further understand how the behaviour of delivery drivers and their management teams can change people's perception of driver safety, therefore influencing a reduction in road risk. The project will explore the effectiveness of a wide range of management initiatives and whether comprehensive risk management policies and processes are associated with beneficial safety outcomes.

My first chapter is a broad introduction to this question. In Chapter 2 I will go on to review relevant information and knowledge relating to the case study, which will include law and industry standards as well as published literature. Chapter 3 explores the methodology that I have chosen, outlines the case study and describes why I have chosen to carry out this investigation from the position of a workplace professional practitioner researcher. The main data collection avenues I have employed are:

- Questionnaires
- Interviews
- Company records
- Road safety reports
- Government reports
- Company driver safety database

Chapter 4 concentrates on the findings and expands on this data, while Chapter 5 outlines recommendations that have arisen from the case study that could be directed towards my line manager, Tesco Dot.com or the industry as a whole. Chapter 6 provides a space for reflection in which I consider what I have learned as a result of this research and I assess to what extent this has developed me as a professional practitioner and whether it has enhanced my effectiveness within Tesco Dot.com.

1.15 Summary

Given that compliance is essential for the safe and accountable running of a business, I identified that the issue at stake was the disconnect between compliance management and operational management. Neither compliance or operational management were working well on their own when I started working at Tesco Dot.com and these two different parts of the organisation were certainly not mutually supportive of each other. I was in an interesting and perhaps unique position to identify this disconnect as I came into the company as an outsider. The job I was initially given did not reflect what I saw as being required by the company, and my knowledge of the legislation (compliance) as well as of the best practice

in driving and safety (operations) enabled me to see the problem and bring this to light in ways that other stakeholders were unable to.

This, reinforced by my recent academic studies, equipped me with some of the necessary knowledge, expertise and motivation to undertake a work based case study such as this doctoral investigation. At the same time, I entered this project with a sense that it might be complex and hampered by setbacks as well as achievements, and this thesis demonstrates how these elements all unfolded in practice.

Chapter 2 - Review of Relevant Knowledge and Information

2.1 Introduction

Through this literature review I intend to explore the two main elements that affect an embedded research practitioner in this particular case study: organisational change and the safety management and legislation that affects, regulates and governs Tesco Dot.com. The objective of my case study is to explore the complex relationships that develop and evolve when endeavouring to change and influence behaviour within the workplace. I intend to review literature that relates to four key areas: firstly, texts that are relevant to a company operating a fleet of 3.5 tonne vans complying with the relevant legislation; secondly, literature about the development of driver safety and compliance within a business; thirdly I will examine texts that help depict the systems and processes I was influential in installing, which in turn will develop understanding in this research of the impact these new approaches have had on the business; finally, I will also review work that provides a conceptual framework for the group behaviour witnessed in the case study. This fourth area has been carried out by researching innovative methods for changing the behaviour of large groups of drivers.

There are many well documented examples of organisational change ranging from NHS, ICI and Jaguar cars for example.

Having been practically involved in the implementation of organisational change, I can see many similarities with my research and the literature published on the subjects.

I undertook a wide-ranging review of four key themes, reading several publications on each:

- Fatigue (34)
- Telematics (29)
- Influencing (25)
- Leadership and Organisational change (42)

Having read extensively the literature linking the four key themes relating to the cycle of knowledge, the practical challenge faced when implementing change and development in the work place and subsequent methodologies adopted to resolve the situation is replicated when implementing processes and polices based on Government reports, Legislation and HSE best practice.

From the eleven authors that have published on the subject of organisational change since 2012, Bolman (2017), illustrates how leaders often plunge mindlessly forward without understanding the real world and (Axelrod and Axelrod, 2017) what happens when

organisation development consultants take theoretical models to work the next day. Both of these interpretations resonate well with me in the real-world functionality of an organisation the size of Tesco. Other, more established authors that have researched organisational change are explored in-depth below.

2.2 Theories and Frameworks of Organisational Change

2.2.1 Context, Content and Process

As discussed in the previous chapter, when I first joined Tesco Dot.com the kind of change that I expected to contribute to was predominantly planned and developmental (Iles and Sutherland, 2001: 14). As became evident to me, if not others, the nature of this change was harder to predict and plan; it was emergent and episodic as the organisation tended to respond in a reactive way to unfolding events relating to driver safety issues (Iles and Sutherland, 2001: 14-15).

There are a plethora of models (and associated literature) for understanding organisational change ranging in type, school of thought, and relative degree of rigour (Cameron and Green, 2015). Todnem (2013) observed that the literature in this field is, 'mostly lacking empirical evidence and supported by unchallenged hypotheses concerning the nature of contemporary organisational change management' (p.369). While latterly there has been a move to develop more evidence-based models of change (Goetsch and Davis, 2014), often the choice of selecting such models will be determined by a range of factors including pragmatic ones (Axelrod 1997; Axelrod *et al*., 2017). That is to say: which model(s) will most effectively help to guide thinking and action in any given, particular situation? Which model(s) will be best suited to achieve my project goals? (Armstrong and Taylor, 2014).

In order to help me make sense of innovation and change within the dynamic scenario (and my changing role within it) found in this case study, I could have chosen a range of models that are relevant. For example, I could have drawn from the fields of total quality management, soft systems, complexity theory and organisational development (Iles and Sutherland, 2001). Within my own context, and as a sole research-practitioner constrained by the level of resources available to me, I felt that the priority lay in understanding the range of pressures and demands being placed on my role and on the multiple priorities competing for time within this situation. This would also be aligned with the kinds of personal and professional values I espouse. I therefore chose to explore the literature relating to two relatively well-evidenced 'broad brush' models for understanding and managing organisational change (Armstrong *et al.,* 2013). Each focus on a particular level-organisational or individual at which change occurs, although there is a degree of overlap between them.

These models are as follows:

- Content, Context and Process Model (CCP) (organisational change)
- Innovation Research (individual change)

Looking at the literature bringing to bear two perspectives on different relational levels would enable me to deliver on the aims of my project, which was to look at a case relating to change both within my company and within me as an agent of that change. The first model, CCP, which originally developed within the business sector several decades ago, seemed particularly relevant to my context given that there was a complex set of drivers and stakeholders involved, including regulatory and legal drivers as discussed later in this chapter. The model offered a potentially useful perspective for understanding the context of Tesco Dot.com, which in some ways was unique, or at least had unique features about it, such as the introduction of new technologies and the opening up of a new type of technology-mediated consumer delivery. Much of what I was learning on the job had few if any precedents in other sectors and if they did, they needed to be understood within a specific context.

The second model again offered a range of different types of theory, including some of the cardinal points of reference in this field such as Rogers' (1983) work on the diffusion of innovations, which I will discuss. Many of these models are developed from psychology and sociology and often interface with business functions such as market research and business start-ups (Iles and Sutherland, 2001: 56). Due to the fact that the innovation in question here is still on-going and that its gestation period had been fairly complex, I decided to opt also for another relatively recent model by (Van de Ven *et al.,* 2007), which looks at innovation as something occurring over time. In this way innovation is seen as enacting a kind of journey whether this is smooth or otherwise, like in this case study as the route had some unpredictable as well as predictable destinations and stopping-off points. Therefore Van de Ven *et al.,'*s 'innovation is journey' metaphor seemed to resonate with my sense of life and career forming a kind of trajectory. In addition, de Ven's work, like that of others in this field, depicts 'innovation in practice'. This also resonated with what I have learnt throughout life and that (to my mind) wisely cautions against the still widespread assumption that an innovation journey can be controlled, or at least controlled by managers.

2.3 Theories of Innovation

Whilst undertaking my project it has been difficult to find robust, well-evidenced literature derived from large organisations. However, work undertaken by (Andrew Pettigrew *et al.,* 1991) provides many clear insights into the dilemmas faced by several large organisations and their ideas have been tested in the private and public sectors, including the UK National

Health Service. In their influential book *Managing Change for Competitive Success* (1991) Pettigrew and Whipp set out three dimensions of change:

- Content (or the 'what'-objectives, purpose and goals)
- Process (or the 'how'-implementation)
- Context (or the 'why'-the internal and external environment)

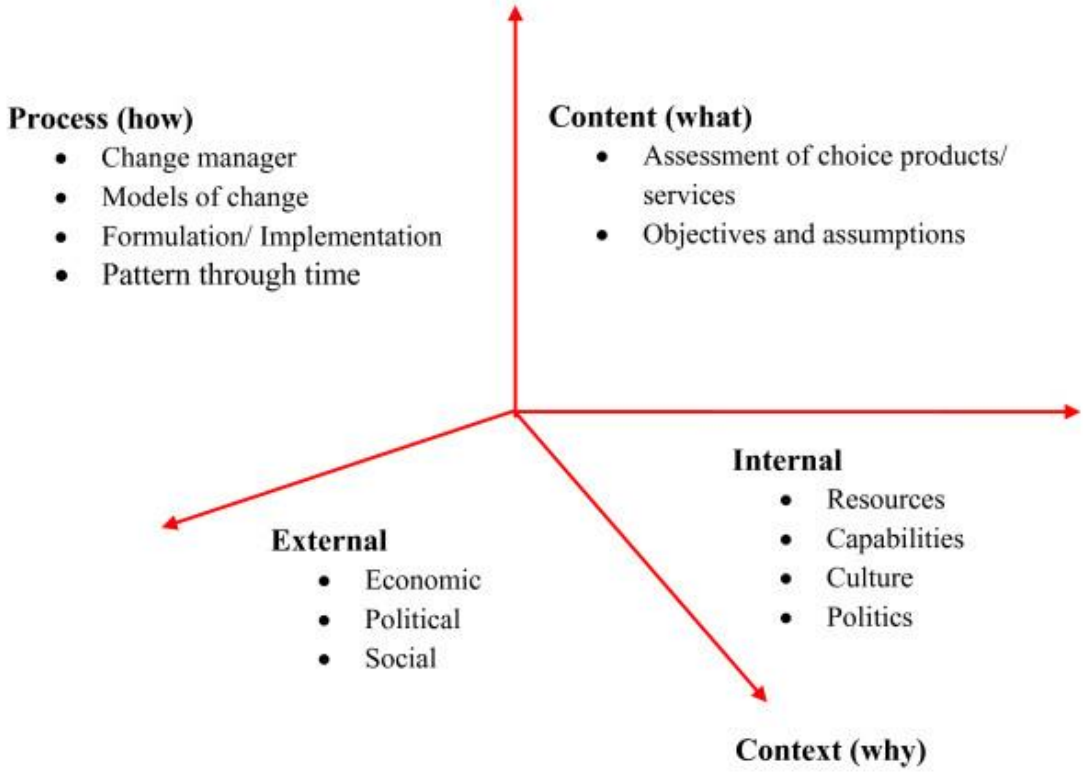


Figure 10 Example of Pettigrew and Whipp's, Managing Change Model, 2005. Source: IIes and Cranfield

When reviewing the literature, I came across a large selection of texts of varying quality relating to businesses and organisational change within large companies similar to the work carried out by Pettigrew (1985a) and Martin (1992). In recent years, large-scale organisational change (LSOC) processes have become an increasingly popular area of investigation in the fields of organisational behaviour and organisation development (for example: Boeker, 1997; Bremer, 2012; Buchanan, and Badham, 2008; Burke, Cooper and Antoniou 2015; Casway, Deszca and Ingols, 2015; Gersick *et al.,* 1973; Myers, Hulks, and Wiggins, 2012; Grieves, 2010; Poole, Ven, and Dooley, 2000; Senior and Swailes, 2012).

Despite the prevalence of such investigations, relatively little is understood or agreed on about the nature and measurement of LSOC Lewis (2011) and Kezer (2011).

There are myriad different yet related names and definitions of large-scale change, processes such as:

- Transformational change
- Revolutionary change
- Major change
- Fundamental change
- Radical change

There appears to be a lack of agreement on how to define this type of investigation. As a result, efforts to integrate various change theories and processes, although relatively infrequent, have become increasingly desirable (Van de Ven *et al.,* 2000). Therefore, in order to formulate a more comprehensive model for examining the phenomenon of change, more emphasis on the integration of established approaches seems warranted. Traditionally, studies into large organisations have been shaped by the assumption that there is a clear beginning and an end to organisational change and development. Therefore, such studies are often preoccupied with the intricacies of narrow changes rather than holistic and dynamic analysis of an ever-changing bigger picture. In other words, there has been a concentration on the micro to the detriment of the meso and macro level.

Stemming from this common and over-simplistic view of organisational change, achieving change requires sometimes massive adjustments to the structure and ethos of inter-organisational planning and relationships (Van de Ven and Huber, 1990). The management and managerial skills needed to affect such shifts certainly do not fit readily with the concept of rational processes and top-down directives and are likely to engage a broader range of managerial and people skills. These skills were lacking at times in the overall spread within the company I researched, as I demonstrate more recent authors (Caldwell, Herold and Fedor, 2004; Campling and Haigh 1999; Hardy, 1996; Hickman, 2009; Johnson, 1987; Kaplan, 2013; Lindsay and Lindsay, 1997; Norman, 1977; Pfeffer, 1994; Smith, 2016; Hickman, 2010; Hardy, 1996; Kaplan, 2013; Johnson, 1987; Caldwell, Herold and Fedor, 2004) have expressed the view that the idea of process which combines rational, political and cultural elements has real power in explaining organisational community and change.

An example of an organisational change in the workplace is shown in the research conducted by Sir John Harvey Jones who was working in the rapidly changing economic conditions facing ICI in the late 1970s. It was in this context that he had to help win support for a new company strategy (Pettigrew, 1985, 85b). During this period Sir John Harvey Jones, this time working with BP, reduced the levels of management from fourteen to five.

This change created a significant improvement in the level of communication within the company. Securing a better understanding of how the environment was changing formed a key part of the management of strategic organisational change in private sector settings such as Jaguar cars (Pettigrew and Whipp, 1991). This research conducted by Pettigrew and Whipp showed a better understanding of how the wider environment is a key part of the management of strategic change in the private sector, as demonstrated in their study with Jaguar cars and BP, where the overall holistic view of the organisation needed to be taken into account.

Sir Robert Roy Griffiths' report in 1983 argues that the differences that exist between private and public sector organisations have been much overstated; this message was repeated in (1991). Supporting this theory, Ackroyd, Hughes and Soothill (1989) and Merchant (2007) argue that public services have sufficient in common to be treated as a relatively homogeneous group, both in their management style and typically where managers have been recruited from the ranks of professionals from external private companies. They argue that management style and understanding facilitate successful organisational change. Neither a company CEO, board nor Government Minister can evoke change without a top-to-bottom and more importantly bottom-to-top empathetic commitment to change Mintzberg (1983).

The organisational life cycle metaphor used by (Kimberly and Miles, 1980) with the concept of organisational 'stages' provides another device for understanding change. However, its fatalistic conceptualisation of when the moment of change can occur and how to get people on board has been seen as according too little space for the possibility of internal strategic choice, revitalisation and turnaround:

> Turnaround management involves taking an organisation that has been buffeted by the vagaries of diminished resources and setting it on a new course. With rare exception, organisations are turned around only after internal and organisational consequences of decline are so pervasive and severe that consensus on the need for drastic action has grudgingly emerged (Whetten, 1988 p 13-38).

Crisis literature, however, suggests that local variability was in part explained by the possession of managerial and political resources. This further leads to such concepts as 'turnaround management' and group revitalisation:

> Crisis literature debates the effect of plunging organisations into unfamiliar circumstances, jolts can legitimise unorthodox experiments that revitalise them, teach lessons that reacquaint them with their environments, and inspire drama celebrating their ideologies (Meyer, 1982: p 515-537).

Something that resonates clearly with me with regard to the work undertaken over the last 11 years is the concept of organisational culture (Deal and Kennedy, 2008; Kanter, 1985; Pettigrew, 1976, 1979, 1985a; Schein, 1985). Pettigrew (1982) in particular argues that any receptive context for change depends on a supportive organisational culture (see Figure 11).

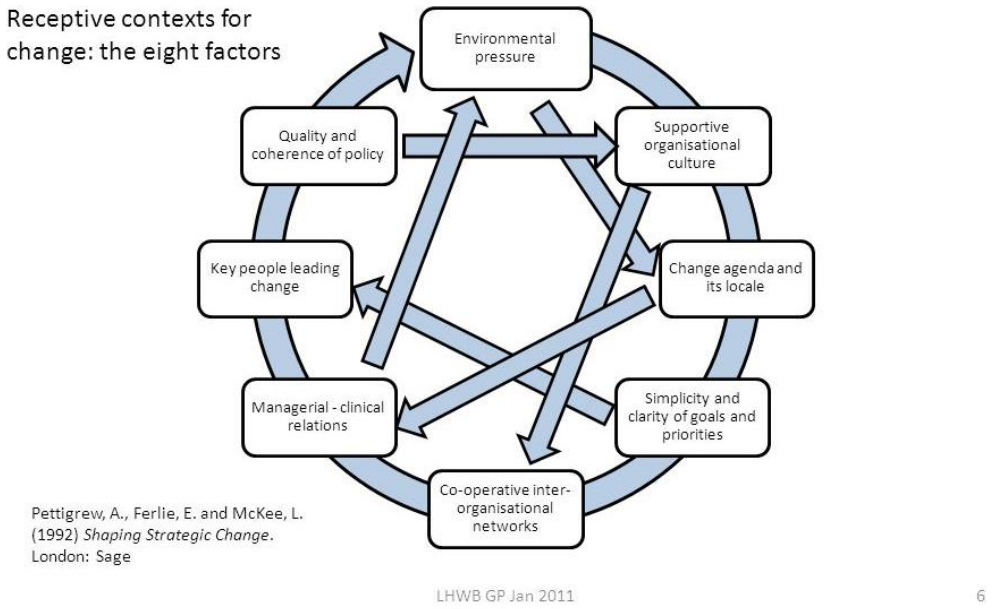


Figure 11 Shaping Strategic Change, Pettigrew, 1982.
Source: Pettigrew. A, Ferlie, E. and McKee, L.

Mogan (2006) suggests the use of energy as a metaphor for making sense of the concept of 'organisational endeavour'. He references its scholarly origins in anthropology and sociology and suggests its characteristics of elasticity.

In a similar vein (Quinn *et al.,*1997) take an ironical view of how the concept has been exploited and sometimes misrepresented 'on the management scene' as arriving, 'like a typhoon blowing in from the Far East' (pp. 531-551). This concept relates closely to corporate interest since the late 1980s Morgan (2006) in the cross-cultural comparisons between Japanese and Western cultures.

2.4 Rogers's Diffusion of Innovations

2.4.1 Diffusion

Innovation research is an established field in its own right. It explores the propensity of individuals towards change and implementing new ideas, products or processes and suggested that these inclinations differ. Here I focus on only one model and definition of diffusion, perhaps the most cited, propounded by Rogers in 1981. A seminal definition of diffusion is clearly given in the book *Diffusion of Innovations* (1981) by Everett Rogers where he states:

> Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system. It is a special telecommunication, in that the messages are concerned with new ideas. Communication is a process in which participants create and share information with one another in order to reach a mutual understanding. This diffusion implies that communication is the process of convergence or divergence as two or more individuals exchange information in order to move towards each other or part in the meanings that they give to certain events (Rogers and Kincaid, 1981: p 386).

Pettigrew and Whipp's model explore the social and cultural factors involved in facilitating or hindering change (Pettigrew and Whipp, 1993). By contrast the unit of analysis in Rogers's work is the individual or individual unit/organisation. Rogers also pays comparatively more attention to the characteristics of the innovation itself.

2.4.2 Properties of Diffusion

Rogers found that there are a number of properties of an innovation, particularly a technological innovation, which are likely to promote its success. These are:

1) *Relative advantage*: the degree to which it is perceived to be better than the existing technology – 'is it better than what we have already?'

2) *Compatibility*: the perceived 'fit' of the innovation with existing structures, procedures and values – 'can we introduce it without causing too many problems for the status quo?'

3) *Complexity*: the degree of difficulty involved in learning about and putting into practice the innovation – 'can I learn how to use it quickly and easily?'

4) *Relatability:* the extent to which an innovation can be tried by potential adopters without significant investment of time or resources – 'will it take a lot of time and effort to put into practice, outweighing the benefits?'

5) *Observability*: 'the degree to which outcomes resulting from the adoption of an innovation are visible – 'can we show to all concerned that it works?'

Systematic evaluation of Rogers, five factors have shown that complexity, together with relative advantage and compatibility, are the three attributes which statistically show a significant correlation with adoption (Kapoor *et al.,* 2014).

We know that according to Rogers decisions about an innovation are usually either derived from collective working (group consensus, many people) or authority (top down, few individuals). Within an organisation certain individual who drive through the innovation are termed 'champions' who may or may not exercise authority or power. Champions seek to establish a 'critical mass' for the innovation ('I'll do it because everyone is doing it'). A limitation of Rogers' model, however, is that it assumes innovations are positive and merit adoption and that champions are beneficent: they may well become saboteurs down the line if they object to others implementing their ideas in ways they do not like. Moreover, not all resistance to change is necessarily irrational. Rogers has also been criticised for not adequately addressing the complex cultural and other organisational dynamics which can affect the implementation of an innovation. Models such as Van De Ven take a more nuanced view of these factors.

2.4.3 Van De Ven's Process Models

As mentioned above, the Pettrigrew and Whipp (1993) model is concerned with more of a wider organisational and cross-organisational focus, whereas Rogers (1981) concentrates on the individual unit or organisation as his point of enquiry. Rogers's work also focuses attention on the initial stages of innovation and its implementation and adoption (Van de Ven and Rogers, 1988). Latterly, researchers interested in the processes of innovation have explored different ways in which the innovation 'journey' can be conceptualised as something unfolding over time with varying degrees of predictability depending on a number of factors Van de Ven (1993). These include scale (the size of the unit of change or innovation) and the type of implementation strategy used (its mode). Van De Ven (2007), one of the most widely cited authorities in the field of innovation studies applying this processual lens has observed that:

> A common set of issues are encountered while the innovation journey unfolds in the development of a wide variety of new technologies, products, programme and services. These issues challenge the belief that managers or entrepreneurs can increase their odds of success by developing and practising skills in learning, leading, relating and cycling through the innovation journey (p. 39).

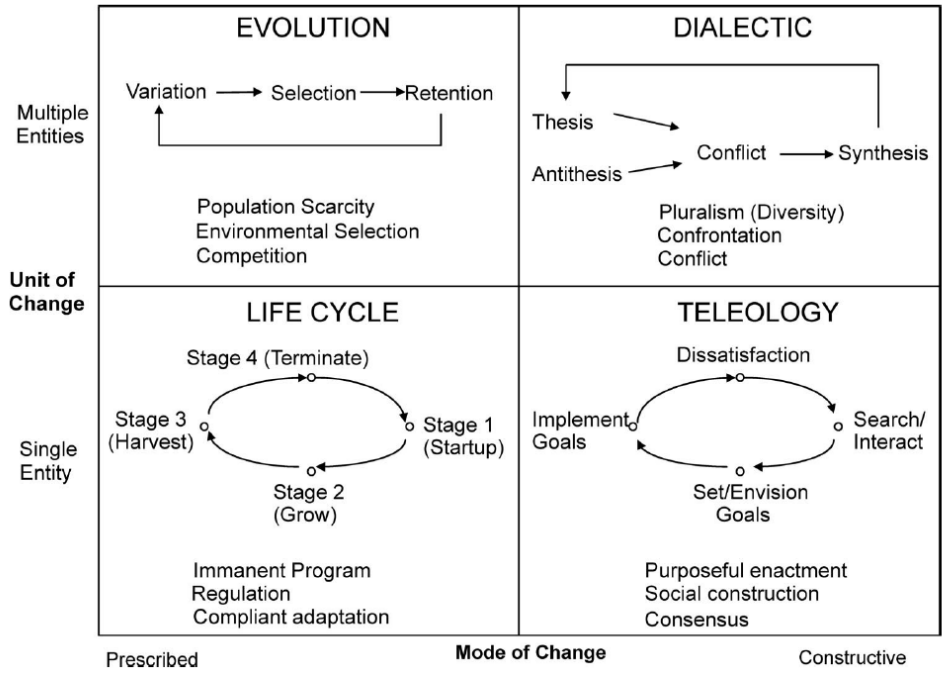


Figure 12 Van De Ven's Process Theories of Organisational Development and Change, 1988. Source: Van de Ven

The above Figure 12 summarises four main types of theory of organisational development and change. Arrows and lines represent likely sequences among events, not causation between events. It shows two analytical dimensions that are useful for classifying developmental progressions in the four ideal-type process theories: the unit and mode of change. The categories ‘life-cycle’, ‘teleology’, ‘dialectical’ and ‘evolution’ provide four internally consistent accounts of change processes in organisational entities. Where and when do these theories apply as explanations for the development of organisational entities? To address this question, it is useful to emphasize four distinguishing characteristics in the preceding discussion of the four theories. In each theory: (a) process is viewed as a different cycle of change events, (b) which is governed by a different "motor" or generating mechanism that (c) operates on a different unit of analysis and (d) represents a different mode of change. Figure 12 provides a metatheoretical scheme for illustrating and distinguishing the four ideal-type theories in terms of these four characteristics. I will now discuss these distinguishing characteristics.

2.4.4 Cycles and Motors of Change

As the cells of Figure 12 illustrate, in each theory the process of development is viewed as unfolding in a fundamentally different progression of change events and is governed by a different motor:

1) A life-cycle model depicts the process of change in its entity as it progresses through a necessary sequence of stages. An institutional, natural, or logical programme prescribes the specific contents of these stages.
2) A teleological model views development as a cycle of goal formulation, implementation, evaluation, and modification. This sequence is based on adaption in response to learning. It emerges through purposeful social construction among individuals within the organisation or entity.
3) In dialectical models of development, conflicts emerge between entities (Van de Ven and Poole, 1995). Through this conflict, in which both parties produce opposing views or actions that respond to one another, the creation of a third way, or a synthesis, occurs. This synthesis then becomes the thesis for the next round of dialectical generation.
4) An evolutionary model of development consists of a repetitive sequence of variation, selection and retention events among entities in a designated population. Competition for scarce environmental resources between entities inhabiting a population generates this evolutionary cycle.

There was a certain sense of commonality found in Van De Ven's work where, he claims, it changes the commonplace view that managers can control the innovation process and that they are solely responsible for its success. Instead, the finding suggests that innovation managers should be held accountable for increasing the odds of success by developing and practising skills in learning, leading, relating and cycling through the journey of innovation Milgram (2009).

In his work, Van De Ven draws some interesting conclusions and parallels that I have found myself when working within Tesco Dot.com. For example, he comments that some of the gestating events are sufficiently large to shock certain attentive entrepreneurs into launching an innovative venture by developing a proposal for obtaining funding. Ocado would be a good example of this as the UK's first online-only grocery home delivery service.

In Van De Ven's model, soon after work begins in the development of the proposed venture, the process proliferates into a diversion cycle exploring new directions. This changes goals, allows for learning by discovery, raises holistic leadership and builds new relationships. I

recognise this series of actions from my work over the course of the last 11 years in which a huge innovation journey has taken place in response to the magnificent strides in technology and working practices that have developed and become second nature within the business, (Merchant and Van der Stede, 2007).

A metaphor used in Van De Ven's work is helpful in suggesting ways to increase the odds of manoeuvring the innovation journey from concept to implementation. He describes taking on innovation like entering an uncharted river; most people cling to the riverbank, afraid to let go and risk being carried along by the river's current. At a certain point, some people are willing to jump in and trust that they can manoeuvre the river. Whilst going with the flow of the water's current, they begin to look ahead and guide their own course onwards, deciding which route looks best, steering round boulders and snags, and choosing which of the many channels and branches of the river they prefer to follow. Because some have developed skills and practice traversing various river currents, falls and obstructions, they manoeuvre the river more adeptly than others who have not learned to swim well. While this increases their odds of success, one ultimately cannot control the river O'Reilly (2005).

2.5 Management Styles

There is a vast quantity of literature focusing on management styles and I will be concentrating on two areas mentioned in the previous chapter: innovation and change. Pettigrew and Whipp (1993) provide a way of understanding the impact of leadership at the organisational and strategic level when managing change. They write:

> Leading change moves the organisation forward; create the right climate for change; coordinating activities; steering. Set the agenda not only for the direction of the change, but also for the right vision and values p 65-76.

Meanwhile, Rogers (2003) depicts leadership and influence at the individual level from within the context of leading innovation (Miles, 1975; Pfeffer, 1992). Leading Innovation is an application-oriented learning experience in which participants learn how to use their natural leadership abilities and characteristics to encourage and drive bottom-up innovation (Pettigrew, Ferlie and McKee, 1992), so that there is room for ideas and personal growth across the organisation, while once a direction of innovation has been decided upon, then people are led through it in a top-down approach (Adair, 2008; Brown and Posner, 2001).

These main themes of leadership run parallel throughout my project (Hannagan, 2001). Pettigrew and Whipp (1993) have established that leadership is critical to initiating and sustaining change (Hall and Barrett, 2007). Leaders do this by creating a receptive climate or context (Goffin and Mitchell, 2016), coordinating activities, steering the change and

helping the organisation clarify its vision and values (Fisher and Patton, 2011). Change management is improved by developing managers' leadership styles and engagement with other staff and stakeholders. (Van de Ven *et al.,* 2000; Scott, 2015), this helps form the structure of the organisation as it reorients (Lawrence, Lenk and Quinn, 2009).

Rogers (1981) gives a clear insight when looking at the micro-practices of leadership. He points to the importance of certain individuals and their roles and behaviours in the innovation process. Key to the process are opinion leaders (Bass and Stogdill, 1990). These are the people whose opinion exerts most influence on colleagues' predisposition to embrace or resist an innovation (Bjugstad *et al.,* 2006). Opinion leaders are not necessarily the ones with formal power (though they often are) who suggest the innovation or who lead it, Fletcher (2004), but their acceptance must be won if the rest of the organisation is to go along with the adaptation (Kimberley and Miles, 1980). Other key individuals are the advocates or champions of change who drive forward the thinking or the early implementation process (Guba and Lincoln, 2016; Hickman, 2009). If successful in gaining the support of opinion leaders and in convincing others, they help build up a critical mass and then ideally (Bugajska *et al.,* 2011), they back out and leave the late implementation to others (Iles and Sutherland, 2001).

My study focuses on the early to middle implementation stages of the innovation process, as I did not get to the stage where the innovation was embedded Albrecht (2006). Some of the reasons for this were technical/resource issues, but other reasons were due to human behaviour, including the leadership buy-in and the role of opinion formers (Kouzes and Posner, 2006, 1995). Change management is improved by developing managers' leadership styles and engagement with other staff and stakeholders (Bass and Stogdill, 1990). Of particular relevance in the current context are the concepts of laissez-faire, democratic and autocratic models of leadership Lewin (1939) and transformational leadership (Bass and Riggio, 2006). Autocratic leaders take decisions by themselves without consulting the team (Cameron, Sutton and Whetten, 1988). They impose these decisions and demand obedience. Democratic leaders assume an active role in decision-making but will involve team members (Eagly and Johannesen-Schmidt, 2001), although they will accept responsibility for ensuring decisions are implemented and that intended outcomes are achieved. Laissez-faire leaders take very little involvement in decision-making, leaving this to others Martin (1992). They rely on the team's motivation and capabilities to get the work done (Kouzes and Posner, 2006, 1995). While each style may have its strengths and limitations depending on context (Cummings and Worley, 2008), the preference in modern market and service-oriented organisations is for the democratic model as it is more likely to encourage openness and a culture of empowerment and achievement

Kasper (2002). Since the 1970s there has been increasing interest in the notion of transformational leadership (Bass and Riggio, 2006) which focuses on blending these and other approaches to develop the leader-follower relationship in ways that foster improved morale and higher levels of motivation through communicating a shared vision (Sarros and Santora, 2001).

2.6 Research on Driver Safety

2.6.1 Overview of Road Transport Growth

In recent years, road traffic crashes (RTCs) have been a growing global problem according to the World Health Organisation (Time for Action, 2009). Over 1.2 million people die each year on the world's roads and between 20 and 50 million suffer non-fatal injuries. In most regions of the world this epidemic of road traffic injuries is still increasing. Although the UK has historically enjoyed an overall good road safety record, there was an underlying concern within industry, road safety organisations and the Department of Transport that the current situation required action to prevent an escalation of road-related death and injury (Yin and Nie, 1993). A report was commissioned by the Department of Transport and delivered to the British Government Dykes (2001). Its findings were clear: at-work road death and injury were rising and in response to this control measures would need to be found and implemented.

Dykes' (2001) report stated that in that year 320,283 people were involved in road traffic incidents. Just over 3,400 individuals were killed and nearly 40,000 injured. In 2000 the UK Government had published a report *Road Safety Strategy Tomorrow's Roads: safer for everyone*. In this document, the Government produced a group of ten-year targets, which include a 40% reduction in the number of people killed or seriously injured in road accidents; a 50% reduction in the number of children killed or seriously injured; and a 10% reduction in the slight casualty rate. More up-to-date statistics show in 2012 that 1,774 were killed and 23,039 were seriously injured. This shows that the Government is on target to reach its goals set out in 2000 with a 52% and 57% improvement respectively.

Road accidents sustained at work represent between 20% and 40% (WHO, 2014) of work fatalities in most industrialised countries, yet little data on occupational road accident risk factors have been published (Fort *et al.,* 2010). Road crashes are now the most common cause of work-related serious injury (a life-changing event), death and absence in the UK. According to the UK Trades Union Congress (TUC, 2004), traffic collisions while at work are the single biggest cause of employment-related fatality in the UK. The TUC quote statistics that show the annual cost of workers killed or injured on the roads is £3.5 billion.

In 2012 the estimated cost of welfare as a result of road traffic accidents was £15.1 billion (DfT Reported Road Casualties Great Britain 2012, Road traffic statistics).

2.6.2 Driver Fatigue

It is estimated that the total value of preventable reported road accidents in 2014 was (estimated to be) £16.3 billion, statistics from (HSE, 2014), an increase of 11 per cent compared with the same estimate made in 2013 (not considering inflation) (DfT, 2014). This sum encompasses all aspects of the valuation of casualties, including the human costs, which reflect pain, grief and suffering; the direct economic costs of lost output and the medical costs associated with road accident injuries (Danna and Griffin, 1999). The figure includes an estimate of the cost of damage-only accidents but does not allow for unreported accidents (DfT, (2014: p 6).

Research conducted by the charity Brake (No date) states that fatigue is a major contributory factor to crashes in the UK, with too little sleep radically affecting driver attention, awareness, reaction time and ability to control the vehicle (Allen, Piecyk and Piotrowska, 2016). Yet in 2015, government figures recorded fatigue as a contributory factor in just 4% of road fatalities and 2% of all road casualties (Chai *et al.,* 2017). However, these figures are believed to be a very significant under-estimation because fatigue is hard to spot; unlike alcohol and drugs, police cannot test for tiredness (Gastaldi, Rossi and Gecchele, 2014). In fact, research commissioned by the Department for Transport in 2008 found one in six crashes resulting in death and injury on motorways and A roads were fatigue related (DfT, 2008, 2009).

Crashes caused by drivers falling asleep typically involve vehicles running off the road or into the back of another vehicle (Alaiakbari and Moridpour, 2017; Stutts *et al.,* 2003). They tend to be high-speed crashes, because drivers do not brake before crashing, so the risk of death or serious injury is high (Stasi *et al.,* 2012). Even if tired drivers do not fall asleep, they still pose a danger and research suggests driving tired can be as dangerous as drink driving (Wylie *et al.,* 1996). There has been significant research conducted regarding driver fatigue, although the majority of these investigations have been carried out on long distant lorry drivers (Brodie, Lyndal and Elias, 2009; Broughton *et al.,* 2003). Despite the fact that the haulage industry is heavily regulated, unlike the vans used in companies such as Tesco Dot.com, there are clear similarities that can be established (Lal and Craig, 2001). It is crucial to consider this data since driver fatigue causes thousands of road accidents each year (Wolińska *et al.,* 2017; Shi, Tang and Wang, 2017).

Sleepiness reduces reaction time (Owen, King and Lamb, 2015), a critical element of safe driving (Phillips, 2015). It also reduces vigilance, alertness and concentration so that the ability to perform attention-based activities (such as driving) is impaired (Zhang, Wang and Fu, 2014). The speed at which information is processed is also reduced when tired (Strahan, Watson and Lennonb, 2008).

The quality of decision-making may also be affected. Literature on this topic can be divided into several main groups:

- Excessive hours
- Lifestyle
- Drink and drugs

It is not possible to calculate the exact number of sleep-related accidents, but research shows that driver fatigue may be a contributory factor in up to 20% of all road accidents and up to one quarter of fatal and serious accidents (Thiffault and Bergeron, 2003). These types of crashes are about 50% more likely to result in death or serious injury, as they tend to be as a result of high-speed impacts because a driver who has fallen asleep cannot brake or swerve to avoid or reduce the impact (Bass and Riggio, 2006). It is clear that drivers are aware when they are feeling sleepy and so make a conscious decision about whether to continue driving or to stop for a rest (Gharagozlou *et al.,* 2015). It may be that those who persist underestimate the risk of actually falling asleep while driving. Or it may be that some drivers choose to ignore the risks (in the way that drink drivers do) (Li *et al.,* 2017). Crashes caused by tired drivers are most likely to happen Brake (2015):

- on long journeys taking place on monotonous roads such as motorways
- between 2am and 6am
- between 2pm and 4pm (especially after eating or taking even one alcoholic drink)
- after having less sleep than normal
- after drinking alcohol
- if taking medicines that cause drowsiness after long working hours or on journeys home after long shifts, especially night shifts

Furthermore, research carried out by Massimiliano (2013) concluded that:

> According to the sub-categorization of the fatigue concept of (May and Baldwin, 2009), this paper examines the passive task-related (TR) effects of highway driving. The main aim of the study is to evaluate the separate relative importance of each effect in the fatigued state.
>
> The analysis is based on results from driving simulator experiments (conducted at the Transportation Laboratory, University of Padova), widely adopted in recent years for this kind of study. The aim of the research is better comprehension of driving fatigue phenomena, which can affect methods and/or equipment intended to reduce the risk of accidents and to enhance driving safety p 218-224.

I found that the results of the Gastaldi Massimiliano study mirrored some of the common problems emanating from the effects of fatigue found within my own company.

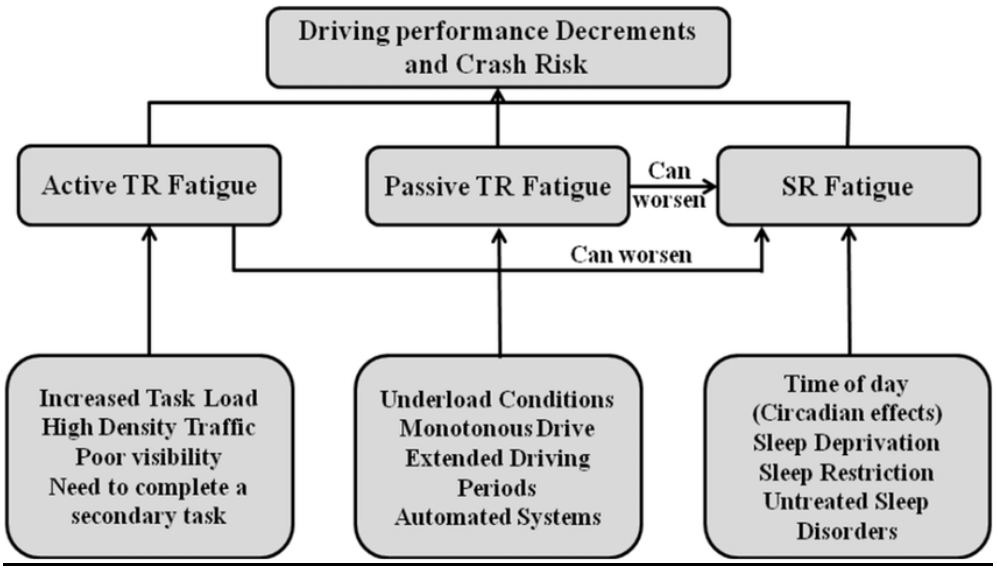


Figure 13 ‘found in my company as illustrated in the flow chart model (figure 13) of driver fatigue of (May and Baldwin 2009) included in the study’.

In an Australian study Murry (2003) of fatigue involvement in work and non-work-related road traffic casualty crashes found that heavy and light trucks were likely to be involved in fatigue-related crashes. Work-related fatigue-involved crashes tended to occur around dawn whereas work related non-fatigue crashes occurred in peak hour traffic.

Research undertaken in some EU member states indicates that driver fatigue is a significant factor in approximately 20% of heavy commercial transport crashes Phillips (2015). The results from various surveys carried out at different times, show over 50% of long-haul drivers have at some time fallen asleep at the wheel (Mittal *et al.,* 2016). One of the most important findings concerning the causes of all fatigue-related crashes is that peak levels at night are often ten times higher than daytime levels (Barr, Popkin and Howarth, 2009). French research into lorry driver working times and habits showed that risk levels vary with three key factors as regards the general problem of fatigue (HSE, 2002). These are that there is an increased risk of crashes: at night (see also the Polish study by Zużewicz and Konarska (2011)), the greater the length of the working day, and also with irregular working hours. They found insomnia most often occurs in truck drivers, drivers older than 35 and those with a BMI above 28. Only every third driver had one full-time job, but the number of work hours of drivers has no influence on insomnia and daytime sleepiness (Alsibai and Manap, 2016). Drivers with insomnia more frequently pose a threat to road traffic, whereas daytime sleepiness does not result in respondents posing the same threat Banks (2008). Drinking coffee has no impact on insomnia and daytime sleepiness, but this may be the result of the number of cups respondents drink during the day (Stasi *et al.,* 2012).

Experiments by (Lenné, Triggs and Redman, 1997) conducted in the early afternoon revealed that these variables reached higher values than those in the morning (circadian rhythm effect). An Australian study (Murray *et al.,* 2003) of fatigue involvement in work and non-work-related road traffic casualty crashes adds detail to this information, as they found that work-related, fatigue-involved crashes tended to occur around dawn whereas work-related, non-fatigue crashes occurred in peak hour traffic (Boufous and Williamson, 2006). Finally, according to previous studies, as the duration of a driving task increases, driving performance decreases (Otmani *et al.,* 2005; Thiffault and Bergeron, 2003) and a peak in driving impairment occurs between 20 and 30 minutes of driving (Thiffault and Bergeron, 2003). These findings suggest that a proposed simulator design can reproduce the onset of the driver fatigue phenomenon and how it first manifests itself. A general examination of the results can be made by highlighting some main findings common to the response variables (Filtness and Naweed, 2017). The results are clear-cut and support several hypotheses regarding the concept of driver fatigue Yin (2009). The results concerning effects produced by the monotony of the environment are also interesting. Although the influence on the response variables of a monotonous environment was not statistically significant, from a qualitative point of view, the differences between driving performance observed in the ‘varied’ and ‘monotonous’ conditions show that environmental stimuli can interfere with driver alertness (Walker, Richardson and Green, 2000). This is a problem that at this point must be addressed in greater depth.

As expected, in the afternoon driving through a monotonous environment impairs performance in comparison with driving through a varied environment; in the morning, the opposite occurs (Box and Bayliss, 2012). This is explained by assuming that in the morning, when the circadian effect is absent, a varied environment may distract drivers. However, this effect, not supported by statistical analysis, needs to be further analysed in future research (BBC News, 2007). Developments should include better definition of the level of monotony or variety in the environment (Fletcher, Petersson and Zelinsky, 2005; Zhao *et al.,* 2012) and deeper analysis of drivers' characteristics, including age, gender and driving style (Taubman-Ben-Ari, Mikulincer and Gillath, 2004).

2.7 Van Driving: The Odd Man Out

The road haulage industry in the UK is closely monitored and controlled by both EU and UK driving regulations referring to all large goods vehicles weighing over 3.5 tonnes. When operating a vehicle of this weight, the company and a nominated individual are beholden to the Traffic Commissioner and the Operator's Licence (Driver Vehicle Services Agency, 2006). However, the industry of operating this licence clearly states driving and rest times applicable to the driver and the required behaviour of the transport company.

Light vans in the UK (2.2 to 3.5 tonnes) are regulated under UK domestic driving hours, which state shift lengths, imply best practice and are rarely enforced. A van driver can potentially drive as many hours as they like. As a consequence of the rapid expansion of internet shopping in the UK over the last 15 years, goods purchased are being delivered predominantly via light van fleets that have grown in number by 53% during this period. At present, there are approximately 4 million vans on UK roads supporting an industry with a turnover of £215 billion, contributing £35 billion to the economy. When you superimpose the fact that this rapid expansion has taken place within a largely unregulated industry, a prognostication can be made that the expansion of van use will inevitably fuel an escalation in road death and injury to both the workforce and the general population.

2.8 Driver Safety Behaviour

Road casualty statistics in the UK show that a large proportion of road casualties are accounted for by people who are in some way driving for work, so interventions to improve work-related road risk (WRRR) could have considerable impact and have been taken very seriously within Tesco Dot.com.

I am aware that there are many different forms that interventions focused on WRRR can take. Although there are many providers who can carry out this activity, there is a lack of understanding about which interventions are the most effective and to what degree.

Following extensive searches, I am aware of 63 studies between 1999 and 2011. The main areas covered in this research are:

- Driver training
- Group discussions
- Incentive schemes
- Publicity
- In-vehicle recorders (Telematics and CCTV)
- Organisational approaches

2.8.1 Driver Training

Traditionally, the first and often the only line of defence when attempting to reduce fleet driver accidents has been through practical in-vehicle driver training. Driver training has proved to be one of the most contentious topics in road safety for well over half a century. A recent Transport Research Laboratory (TRL) review concluded that there was no evidence that pre-licence training had any measurable effect on crash risk, and many of the reports of the effectiveness of post-licence training are largely anecdotal.

2.8.2 Group Discussions

One method that has aimed to raise safety consciousness and thereby bring about behavioural change is the use of group discussions and workshops among employees. This method has not been widely used as a WRRR intervention but is one that would seem to offer promise.

2.8.3 Incentives

The road traffic system operates largely on the principle that bad behaviour should be punished, but good behaviour goes unrewarded. The corporate fleet environment is one where there is the possibility of redressing this balance and many studies have been carried out to look at the effects of incentives or rewards on driver behaviour and accident rates (Reason *et al.,* 2001).

2.8.4 Publicity

A review of US work covered a range of procedures, such as promise cards, performance feedback, pledge cards and safety reminders. However, there is no hard evidence in the literature that the interventions described above are effective in improving WRRR.

2.8.5 In-Vehicle Data Recorders (IVDRs) or Telematics

The traditional solution for improving driver behaviour has been to have one-to-one coaching. This method is effective at the time but there is usuallly a marked drop-off in the driver's ability after a few months and it is also extremely expensive. A more contemporary, cheaper and more consistent method of improving and mantaining driver behaviour is via the use of telematics. Telematics is a device that monitors the driver's activities such as the timestamp of their driving and the speed at which they are travelling. Telematics also stores the situation, for example, when the driver applies the brake etc.. Having this data available if a vehicle undergoes any accident provides detailed information so that a forensic team is able to get a much clearer understanding of what happened during the incident. The use of telematics at Tesco Dot.com has been revolutionary in the context of monitoring driver behaviour and route planning. The data collected is structured in a standard format based on: speed, acceleration, braking and cornering.

In-vehicle data recording systems have come into widespread use in recent times in occupational settings. They were widely referred to originally as 'black boxes', partly because the early versions were quite large, but mainly because the original use, as in aircraft, was to collect data in the period immediately before a crash. When it comes to hard evidence, the picture is a familiar one of potential not being recognised. The opportunity to collect and use real-time data in real-world situations should not be lightly dismissed.

For automobile insurance firms, telemetric analysis represents a valuable and growing way to identify the risk associated with each driver (Baecke and Bocca, 2017). The pricing decisions of an insurer are best accounted for if they are made considering behaviour instead of traditional measures such as the driver's gender and age, place of residence and car model to set the premiums offered. These traditional criteria provide a fairly low predictability of the risks taken by a driver while on the road. As a consequence, the interest in insurance telematics, i.e. usage-based automotive insurance where data on driving behaviour is collected by means of telecommunication, has grown at a rapid pace during the last few years. The total subscriber base is expected to reach 85.5 million by 2018. Decisions made on such factors can eventually lead to increased premium or reduced liability for unsafe or reckless drivers and can also help in transitioning the burden to the policies that lead to increased liability (Golias, Yannis and Antoniou, 2002).

As of yet, the largest market participants have collected data by the use of in-vehicle sensors accessed through an on-board diagnostics port. Recently, however, several insurers and telematics service providers have started looking towards smartphone-based solutions. Thanks to the large number of embedded sensors, smartphones are able to provide insurers

with rich driving data. Collecting data by the use of smartphones is also generally cheaper and less logistically demanding than using vehicle-based sensors. In addition, smartphones have proven to be excellent platforms for providing the user with driving feedback and allowing for advanced user interaction. This is expected to increase both overall driver safety and the transparency of automotive insurance programs (Ayuso, Guillen and Nielsen, 2018).

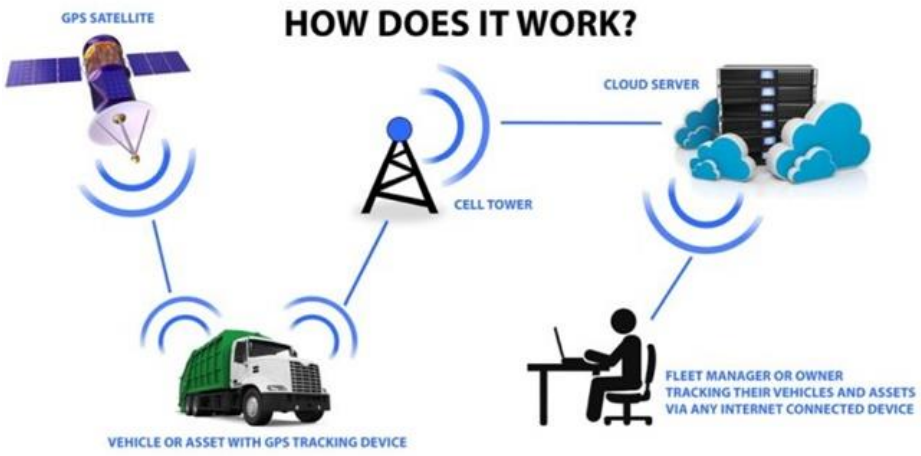


Figure 14 An example of how Telematics work

San Jose State University carried out a study; the dataset provided for their project by AXA has 50,000 trips from anonymized drivers. A small and varied number of false trips (taken by someone other than the driver being studied) were attributed to each driver Green (2004). The goal of the project was to try and understand different driving signatures so as to be able to identify trips that were not made by the driver being studied. This would show whether patterns and probable driving styles can be charted.

There are numerous predictions concerning how integrated telematic systems will become in the motor vehicle market (Cole and Londal, 2000; Richardson and Green, 2000; Green, Flynn, Vanderhagen, Ziomek, Ullman, and Mayer, 2001; Frost and Sullivan, 2002). Although such predictions tend to be a bit optimistic, widespread use of telematics is already taking place. Telematics can have significant benefits, allowing drivers to make better use of their time and to support driving in a variety of ways. However the concern is that some tasks when performed under pressure can pose a significant risk to drivers and other road users. There is a growing body of evidence that the use of telematics is associated with crashes. For several years the National Police Agency of Japan has been reporting data on crashes associated with navigation systems (Diabat and Govindan, 2011). The National

Police Agency statistics are interesting because they specifically identify phone and navigation systems as causal or contributing factors in crashes, a connection that is made apparent by the narratives provided by the drivers involved in these crashes. Drivers might say something such as, 'I started to enter information into the navigation system and was looking at the display. When I looked up, Mr. ***'s car was in front of me and I could not avoid it. I do not know how I got so close to his car'.

Other evidence comes from National Highway Traffic Safety Administration (NHTSA) research (Wang, Knipling and Goodman, 1996), several studies by Jane Stutts at North Carolina (Stutts, Reinfurt, and Rodgman, 2001; Stutts, *et al.,* 2003); Stutts and Hunter, 2003), recent UMTRI research as part of the SAVE-IT project (Eby and Kostyniuk, 2003; Thulin and Gustafsson, 2004). Surprisingly, distraction-related crashes tend to be relatively more likely during the daytime, in good weather conditions that are usually favourable to safe driving. When compared with all other crashes in which the driver is not impaired by alcohol or fatigue, rear-end collisions of all types tend to be much more common. To sum up, the crash literature makes three key points:

1) Telematics can be a contributing factor to crash levels.
2) In crashes where telematics use is a contributing factor, drivers become so engrossed in the in-vehicle task that they lose sight of the driving task.
3) Crashes associated with telematics use are relatively more likely to occur in benign conditions (in good weather on good roads).

2.8.6 Organisational Approaches

All previous interventions have been concerned directly with change at the employee level in an organisation. A recent major shift in research emphasis has been from placing emphasis on how individuals respond to interventions, to how the wider organisation as a whole plans interventions (Iles and Cranfield, 2004).

2.9 Methodological Issues

One obvious feature of changing practices in the last decade has been the shift from single to multiple interventions, in which organisations are encouraged to adopt 'proactive multiple-strategy approaches', which have been very successful within Tesco Dot.com. Such strategies, however, inevitably lead to methodological problems when it comes to researching the benefit of multiple interventions as it becomes impossible to distinguish the unique impact of initiatives when they are implemented in combination with others. This reinforces the advantage of my approach as an inside research practitioner who is able to analyse the situation but can understand its various aspects through embedded knowledge.

Another research trend in the last decade is concerned with the investigation of attitudinal and behavioural factors associated with crashes. The rationale for this activity is that if it can be shown that self-reporting measures are predictive of crash involvement, then they would provide a richer and more informative outcome measure than the mere counting of crash frequencies. There are many inherent problems with this approach, and it has achieved only limited success to date. A realistic assessment should be that the prospect for developing proxy measures for fleet accidents at present looks challenging.

Since 1999, there have been six independent reviews of the literature; all six experienced difficulty in finding well-controlled evaluation studies. If one adopts the not unreasonable criterion that an evaluation study should assess whether an intervention has brought about a statistically reliable change in crash rates, then the results are meagre in the extreme. Only four interventions met this criterion, three were in the same investigation, and all were conducted more than a decade ago.

2.10 Accident Rates Amongst Van Drivers

Incident data in relation to Light Commercial Vehicles (LCVs) is limited (European Parliament, 2009) and information that is available is held in STATS19, the UK's database of reported incidents. A limitation of STATS19 is that it only holds details on incidents that were reported to the police. Incidents involving vans have reduced both in number (down 29%) and the rate per billion miles driven (down 42%), despite the number of vans registered increasing over the same period up 29% (RAC).

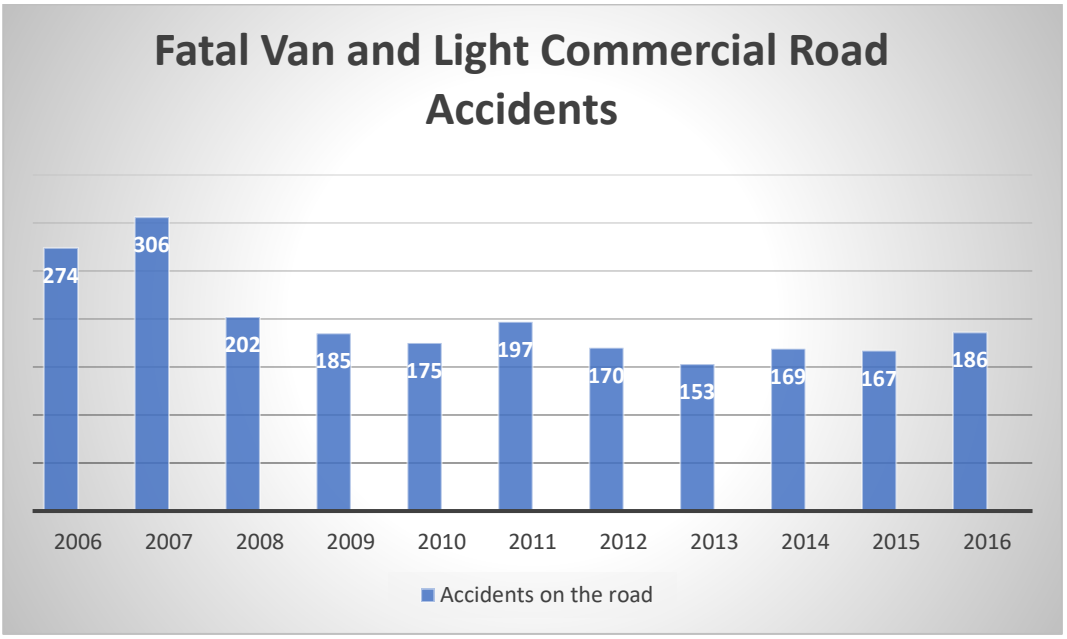


Figure 15 UK Van and Light commercial fatal road accidents statistics, 2016.
Source: Department for Transport

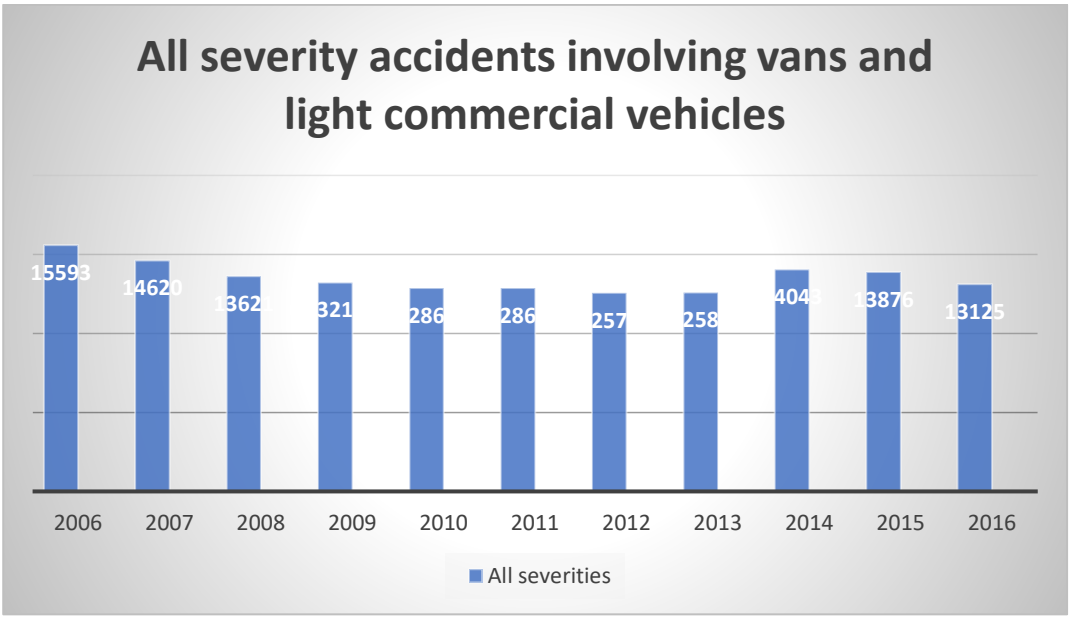


Figure 16 UK Van and Light Commercial Fatal Road Accident Statistics, 2016. Source: Department for Transport

2.11 The Impact of Overweight Vehicles on Safety

Despite the high standards of some company-owned van fleets, vans as a road user group suffer from a lack of legal compliance. From drivers, vehicle owners and managers, statistics show that there is overall a poor understanding of individual and collective responsibility. The Driver Vehicle and Standards Agency (DVSA) operates a targeted approach to all its vehicle enforcement, including checking vehicles for being overweight. Vans stopped by (DVSA, 2015) show an 89% overloading rate and 50% of vans suffer a first-time MoT failure rate.

It is incumbent upon those running van fleets to protect the public safety and to fulfil their duty-of-care obligations to their employees. As we have seen in this chapter, driving is often the biggest work-related risk that their employees face. To put this in context, police officers and firefighters in the UK are less likely to die in the line of duty than they are on their journey to work each morning. This road risk extends, of course, to all road users, whether professional drivers or not. By training those who drive for work in roadworthiness and safe-driving practice, employers extend that greater safety into the wider community.

Van overloading is a concern, possibly caused by the lack of regulatory controls and low cost of entry to van operations (TfL, 2007). Roadside checks show that vans are regularly overloaded and official data suggests that a concerning proportion of vans are not well maintained (Brake, n.d.). These can be important factors that lead to accidents (Poznan School of Logistics, 2010).

2.11.1 Definition of a Van

Although the British Government is clear in the definition of the various categories of vehicles through taxation and operational law, these definitions are further complicated by the various industry groups that operate and work with vans. This makes the investigation of van data and activities particularly difficult to investigate.

2.11.2 DVLA's Vehicle Body Types Definition

DVLA records a body type for each registered vehicle. These body types relate to the physical construction of the vehicle, but not the way in which it is currently being used (FTA, 2015-16). For the purposes of this project, a van is defined as a vehicle dedicated to moving freight or providing a non-passenger service that weighs no more than 3.5 tonnes (gross vehicle weight).

2.11.3 Legal and Regulatory Contexts

There are several main streams of legislation or government policy enforced by the HSE that impact a van fleet that operates under a 3.5 tonne weight limit, i.e. a Light Commercial Vehicle (LCV). The problem with this legislation is that it refers to 'driving hours' as well as time working and time on duty. Unfortunately, a 3.5 tonne LCV does not have to be fitted with a tachograph device, like in larger vehicles, that would record driving time and other driving-related activity. This lack of information on actual driving time, amalgamated with HSE recommendations and existing Tesco policies, has created a complex situation and continued the toxic mix of overlapping rules and regulations affecting a management team with little or no knowledge of the needs of an LCV logistics operation.

A fundamental portion of the legislation that an LCV fleet is free from is due to the fact that drivers do not have to hold an 'Tacho card' controlled and implemented by the Traffic Commissioner's office. Although we are not covered by this area of legislation that would directly control and affect a distribution operation using vehicles over 3.5 tonnes, it is the lack of clarity furnished by operator's licence confines that leaves a van operation effectively out of scope from the DVSA and lacking clear and effective controls.

The legislation that does cover an LCV fleet is GB Domestic Driving Rules.

2.11.4 The 2016 Health and Safety Sentencing Guidelines: How Have Things Changed for Companies?

On 1 February 2016, the new sentencing guidelines for health and safety offences came into force. They direct the courts to consider sentencing offending organisations via a step-by-step approach. This primarily examines culpability, the seriousness of harm risked and the likelihood of harm, which is divided into a number of different scales within various categories. In light of a number of preceding Court of Appeal judgments expressing the same view, the guidelines then require an assessment of turnover in order to set a starting-point for a fine that is intended, 'to bring the message home to the directors and shareholders of offending organisations', as stated by the Judge in the environmental prosecution of Thames Water. The majority of the other sentencing steps relate to the consideration of increasing or decreasing the level of fine according to a range of factors. There are similar guidelines for the sentencing of individuals for health and safety offences, with a stronger focus on the risk of a custodial sentence for those found guilty of serious breaches.

Ever since the Sentencing Council proposed these new guidelines, the health and safety industry has anticipated a revolutionary impact on the levels of fines compared to those that have historically been handed down for simple health and safety breaches committed by corporate entities. Although we are still in a 'budding' phase, we can begin to analyse the influence that the guidelines have had on the courts to date and we can also consider the extent to which they may affect future sentencing trends.

2.11.5 The Guidelines in Practice

February 2016 heralded a new era in sentencing for health and safety offences. On the eighth of the month, ConocoPhillips (UK) Limited became the first very large organisation to be convicted and sentenced under the new regime, although the hearing actually commenced prior to the date on which the new guidelines came into force. The company, which has a turnover of £4.8 billion, pleaded guilty to three breaches of relevant health and safety regulations for a series of uncontrolled and unexpected gas releases at one of its offshore installations (HSE, 2016).

Although nobody was injured as a result of the breaches, due to communication breakdown workers were sent to investigate the incident while there was still gas present. When sentencing, the Judge commented that the risk of death or serious injury would have been extremely high had there been a gas ignition. In applying the guidelines, this may have been regarded as a 'Harm Category 1' case due to the seriousness of the harm

risked and the high likelihood of harm. Although the company had procedures and safeguards in place, the Judge noted a failure to properly identify and control risks. The level of culpability, in this case, may have been classed as 'medium' as systems were in place, but they were not sufficiently adhered to or implemented.

Independent analysis of the guidelines shows that in sentencing, the starting-point for a fine could be £1.3 million, with a range of £800,000 to £3.2 million to accommodate mitigating or aggravating features. In mitigation, the company pointed to its high level of cooperation with the HSE as well as significant investment in new systems designed to prevent recurrence. When considering the company's billion pound turnover, it is also worth noting that the company, in fact, made a pre-tax loss of £85 million. The fine that was actually imposed by the court was £3 million, which equates to £1 million for each offence.

A number of cases heard weeks before the guidelines came into effect also illustrated the prescriptive and uniform approach to be adopted by the courts. Four different Crown Courts imposed fines of £1m or more against large companies for health and safety breaches (all of which followed early guilty pleas) as shown in the following table.

Table 1 Recent Health and Safety Fines, HSE Enforcement in Great Britain 2016

Corporate Offender	Date Of Sentence	Harm Caused	Approximate Turnover	Level Of Fine Imposed
C.R.O Ports London	21 January	Arm injury	£25m	£1.8m
Balfour Beatty Civil Engineering	25 January	Fatality	£8.8bn (group turnover)	£1m
National Grid Gas	25 January	Broken leg	£3bn	£1m
UK Power Networks (Operations)	26 January	Fatality	£1bn	£1m

2.12 Corporate Considerations

The culpability of a defendant company remains the most decisive factor in determining the appropriate level of fine to be imposed by the courts. Therefore, the importance of achieving high standards of compliance with health and safety legislation has never been greater for organisations. Those companies found to have committed deliberate breaches of, or who have flagrantly disregarded, the law or even those that fall far short of the appropriate standard will be subject to the largest fines. This means that it is crucial for organisations to be able to demonstrate that they have robust safety management systems in place that are properly invested in and implemented.

In light of the guidelines' focus on company turnover, fines for large and very large companies that are guilty of committing health and safety offences are going to increase significantly. Arguments about which corporate accounts should be considered by the court will be significant. Such battles will be especially pertinent when dealing with groups of companies and joint ventures consisting of distinct incorporated (or even unincorporated) entities. This should be of concern to a company as large as Tesco.

2.13 The Driver and Vehicle Standards Agency (DVSA)

The Driver and Vehicle Standards Agency (DVSA) previously Vehicle Operator Services Agency, VOSA, is the government agency that carries out driving tests, approves people to be driving instructors and MOT testers, carries out tests to make sure lorries and buses are safe to drive, carries out roadside checks on drivers and vehicles, and monitors vehicle recalls. I have developed a good quality working relationship with the two main areas covered by the agency:

- Vehicle and driver safety
- Driver Instructor training and testing

2.13.1 Van and Driver Safety

The journey that Tesco Dot.com has taken to improve driver and van safety has been wide-ranging. There have been many challenges along the way, some of which are still to be fully understood and seamlessly integrated into our business to date. (The Road Vehicles (Construction and Use) Regulations 1986).

2.13.2 Drivers' Hours

The 'GB domestic rules' on drivers' hours as contained in the Transport Act 1968 apply to most goods vehicles that are exempt from EU rules (separate rules apply to Northern Ireland). There are several key components to the legislation that have caused Tesco Dot.com significant and fundamental challenges to comply with, which are explored in the project undertaken here.

2.13.3 Acts of Parliament

- GB Domestic Driving Hours
- Management of Health & Safety at Work Regs, 1999
- Corporate Manslaughter, Corporate Killing Act, 2007
- Health and Safety at Work Act, 1974

Although the 1974 act is thorough and in-depth, the main sections that affect Tesco Dot.com are General Duties of Employers to their Employees (Health and Safety at Work Act 1974):

- Section 2: Duty of Care to Staff
- Section 3: Duty of Care to Others
- Section 7: Employee's Duty of Care
- Section 37: Management of Duty of Care

2.13.4 Evolvement of Light Goods Vans

In the UK, road safety and the relationship between industry, transport, community and the economy have always been close but not always wholly collaborative. The development of transport in the UK from horse-drawn vehicles, to the railways and more recently to the road network, has been a highly regulated process. Regulations and legislation have been used equally to provide a level of public safety but also to support the development of industry, with the expectation that wealth would be generated for the nation as a whole because of improvements in transportation.

2.14 Van Growth

2.14.1 Is Van Growth Sustainable?

LCV travel has seen unprecedented growth over the last 20 years, with a 5.5% growth last year to 44.9 billion miles and a total growth of 69%. This is also linked with an alarming 5.5% growth in travel on rural roads, which are statistically the most dangerous. This is compared with a 20-year growth of 3.8% in HGVs (DfT, 2014:.2).

The phenomenal growth in vans supporting the economy, now reaching 4 million units covering just less than 50 billion miles a year, is being offset by a huge negative growth in 'B' car licence holds (the minimum requirement to drive a van). Over the last 20 years, the proportion of young people with full driving licences has decreased, from 44% of 17 to 20-year-olds in 1995/97 to 31% in 2013. This has impacted massively on the ever-diminishing pool of drivers that you can recruit from (DfT traffic estimates 2014, p. 4).

Cairns' research published in 2005 reported on modelling work that suggested that internet home delivery of groceries would reduce car traffic for grocery shopping by as much as 70% implying that home delivery could be a benefit to traffic rather than a challenge by substituting fewer vans for many cars. This was a number often quoted within the industry but has proved to be an overestimate. Research carried out by the Department of Transport in 2015 showed that the number of shopping trips and the

distances driven for that shopping has reduced by only 14% and 19% respectively since 2002 (Allen, Piecyk and Piotrowska, 2016).

In 2013, 72% of British adults shopped online, up from 53% in 2008. It might come as no surprise to learn that Britain has the highest rate of online shopping in Europe . Intuitively, you would think this has led to a big rise in home deliveries and hence van use. But so far, we have scant research to demonstrate this is the case. Over the last decade the number of heavy lorries on British roads has actually fallen, whereas the number of LCVs or vans has risen dramatically: up from 2.5 million in 2002 to 3.3 million in 2012, a period during which we saw a severe recession (Clarke *et al.,* 2014) the number stood at 4 million in 2017. In the same period, Tesco Dot.com's van fleet has grown by 450% from 1,000 to 5,500 covering over 120 million miles per year. In fact, around one in ten of all vehicles on Britain's roads are LCVs and according to Department of Transport figures, the number of LCVs is set to double by 2040.

It is of obvious concern to us that there is a known direct link between slow speeds and an increase in emission of nitrogen oxides (NOx) and particulates from diesel engines. Vans constitute 15% of London traffic and a higher proportion of diesel vehicular traffic; this is why we invested in larger payload vans for our London operation. The current estimate of premature deaths in London alone due to poor air quality from all sources is 9,400 annually (in 2010), with traffic as the biggest contributor (Walton *et al.,* 2015).

Vans are the fastest-growing traffic segment in the UK, with 70% growth in road miles over the last 20 years, compared to 12% for cars and 5.5% for LGVs.

In 2016, the total number of UK online deliveries was 2.7bn, of which the majority, 1.8bn, were business-to-consumer.

2.15 Conclusions

Many driver safety initiatives involve several key stakeholders both within and external to the organisation. In many ways, the lack of communication between stakeholders such as the organisation, insurance companies, government departments and training providers creates a toxic mix of secrecy and self-interest. For long-term sustainable change to take place in an organisation such as Tesco there needs to be a balanced blend of comparable strategies. Change innovation focusing on driver safety has to be driven by a leadership style that promotes the concept of champions within the workforce. Key stakeholders also have to be brought together so that they will ultimately facilitate sustainable safety improvements. The data collected through telematics as expressed in recent research by (Beake and Bocca, 2017) had clear similarities with the disconnect within Tesco Dot.com

between data collection and acting on that data. This has a similar dimension to studies in leadership, organisational change, influencing, telematics and fatigue.

In isolation I can see clear similarities between the research and what I have evidenced within the workplace. The nub of the problem is to find a harmonious blend of management style, process and policy focusing on a real-world approach to driver safety and reducing risk. This with the constant friction between profit and risk.

It is important to bear in mind that the absence of strong evidence of effectiveness does not mean that effectiveness has not been achieved. There have been many case studies in recent times that have claimed impressive gains in improving Occupational Road Risk through the implementation of large-scale programmes. However, it is known that some unsuccessful case studies go unpublished and this, combined with the fact that such large-scale programmes tend to be multifaceted, means that such success stories can contribute little in the way of understanding about the effectiveness of different intervention components.

Without a return to 'classical' evaluation, work to improve Occupational Road Risk can only be on an ad hoc and less than efficient basis. There are of course commercial and practical issues that remain to be overcome when trying to persuade industry to engage in evaluation studies. Companies may not wish to invest time and money in such studies if they perceive that holistic approaches are not beneficial.

The fundamental finding from reviewing the literature as outlined in this chapter has been that it is accepted that there are commercial and practical issues in trying to persuade industry to engage in evaluation studies. The main conclusion of the project is that there is a pressing need for more and better-controlled evaluation work if a more thorough understanding of Occupational Road Risk issues is to be achieved. This being said, there has been a significant reduction in accidents, prosecutions and running costs throughout the period of my research. There are many commonalities between existing research and what I found when conducting my research, particularly in the areas of leadership, organisational change, influencing, telematics and fatigue.

Chapter 3 - Methodology

I have chosen to undertake a case study of innovation and change for my final project. I have drawn on a range of qualitative and quantitative research methods, which could be described as a pragmatic, mixed-methods approach Yin (2009b). Specifically, the data collection and the analysis methods and tools employed in this research include quantitative data analysis derived from company-related activities and interventions, as well as thematic analysis of written and other types of documents and interviews with staff. In carrying out this case study I position myself as an insider researcher-practitioner.

3.1 Case Study Approach

My project methodology lies within the profile of the case study by Yin (1993) as described. Such contemporary understandings of case studies have highlighted their function in terms of an in-depth exploration of a particular context often, but not invariably, using a range of qualitative research methods, which have a sociological inflexion. Case studies are typically contrasted with survey research, which does not engage with context and processes to the same extent or in the same depth. (Yin, 1993) divides case studies into two main types serving different purposes: the critical case, which challenges the status quo, or which provides potentially unique counterexamples to existing knowledge and practice; and the revelatory case study, which sets out to gain fresh insights into a given topic. The present approach seeks to embody the latter, given that the field it explores i.e. innovation in road traffic safety and its implications for workforce planning development within a complex regulatory environment, is relatively new, and there are few comparative studies with which to place it in contrast. To pursue the driving metaphor, this is a relatively new roadmap for professional knowledge and practice.

Cases can also be undertaken as single studies or as multiple cases across sites. As implied in the previous chapter, my position within the organisation in which I am situating the research provides me with detailed knowledge of, and access to, a particular context over a period of time, a context that is still unfolding. As an individual insider-researcher limited to one setting, albeit in shifting roles over time, my position and resources to some extent dictate a single site study, with the strengths and limitations this implies for generalisation and validity-issues I return to later.

An argument could be made for adopting an alternative approach to understanding the nature of innovation, which relies more on snapshots, vignettes, or what has happened over time. Examples of this kind might include experiments or quasi-experiments, such as those designed by (White and Sabarwal, 2014) to evaluate a given intervention, or a cross-sectional study of knowledge and practice at one, given point in time (Meng *et al.,* 2012). Such alternative approaches might well capture valuable data about individual 'cases' of work-based innovation but these would not by themselves constitute a case study in Yin's (1993) sense of the term, which implies something more processual in nature based on a deep understanding of context: that is the resources, capabilities, culture and politics of the organisation (Pettigrew and Whipp, 1991). Much of what I have been learning and doing within my organisation has been in response to changing strategic goals and significant shifts in the culture of the organisation, including in relation to the culture of road safety becoming increasingly embedded in the everyday thinking of Tesco Dotcom. I have seen and contributed to many individual 'cases' or scenarios in the workplace, having had privileged access to the underpinning mechanisms and drivers of decisions that have been taken and the consequences of their implementation. I have had ample opportunity to delve beneath the surface of the organisation's behaviour, enabling me to detect patterns emerging. At the same time, as an actor within the process, I have had few presumptions about what might happen, and often it has only been after the event that the true nature of what has unfolded, and its implications for further strategic action (including my contributions), have become clear.

This chapter is sub-divided into several sections. First, I will briefly review the methodologies traditionally used by practitioner researchers and carry out an analysis of possible approaches for work-based projects. I will define and frame my selected research methodology, human factors and the qualitative data collection techniques I have employed throughout my research. I will also investigate and make transparent the advantages and disadvantages of a case study in relation to workplace researcher activity. In addition to this, I will fully explore ethical issues related to my project in the case study as a whole (Appendices 6 and 7).

3.2 Methodologies Employed by Practitioner-Researchers

Epistemology, or the theory of knowledge, is the branch of philosophy that studies the nature, methods, limitations and validity of knowledge and belief. The word derives from the Greek words epistēmē, meaning 'knowledge', and λόγος, logos, meaning 'logical discourse'. The primary question to address is: 'What is knowledge?'

According to the positivist paradigm of knowledge, phenomena can be classed as either objective or subjective. From the point of view of a positivistic researcher, science is a systematic way of building knowledge about the world and the means of understanding, predicting and controlling it, through the use of testable explanations and predictions. One of the goals of this approach is to generate testable theories.

In this paradigm, a scientific theory is regarded as complete in itself, in the sense of encompassing all that can be known or understood about given phenomena. Classic examples of positivist research would include the observation of individual behaviour within carefully controlled laboratory settings. In contrast, an alternative paradigm embodied in the naturalistic approach aims not so much to predict and control, placing behaviour into pre-defined categories, but to focus on how it is that individuals behave in their usual settings in order to better understand situations and people as they engage in experience (Lincoln and Guba, 2016). This approach based on observation and reflection of behaviour 'in action' is one of the aims of my research, which is why I am using mixed methods.

The positivistic approach normally seeks to collect and accumulate large quantities of data with the intention of making generalisations. My case study is based on a pragmatic concept, as will be evidenced towards the end of the chapter. I feel that there will be a harmonious combination of both to realistically generate resolutions and development benefiting both the company and the drivers.

3.3 Phenomenon of Study

A phenomenon is the appearance and awareness of things occurring, or manifesting themselves, in experience. It can be described as a concept as it appears to and is constructed by the mind, as distinguished from a noumenon, or the posited 'thing in itself'. The phenomenon of the study is literally what the study is about. Pattern (2002) states:

> The key issue in selecting and making decisions about the appropriate [phenomenon] is to decide what it is you want to be able to say something about at the end of the study. Do you want to have findings of individuals, families, groups or some other phenomenon (Pattern, 2002: p 229).

3.4 Case Study Structure

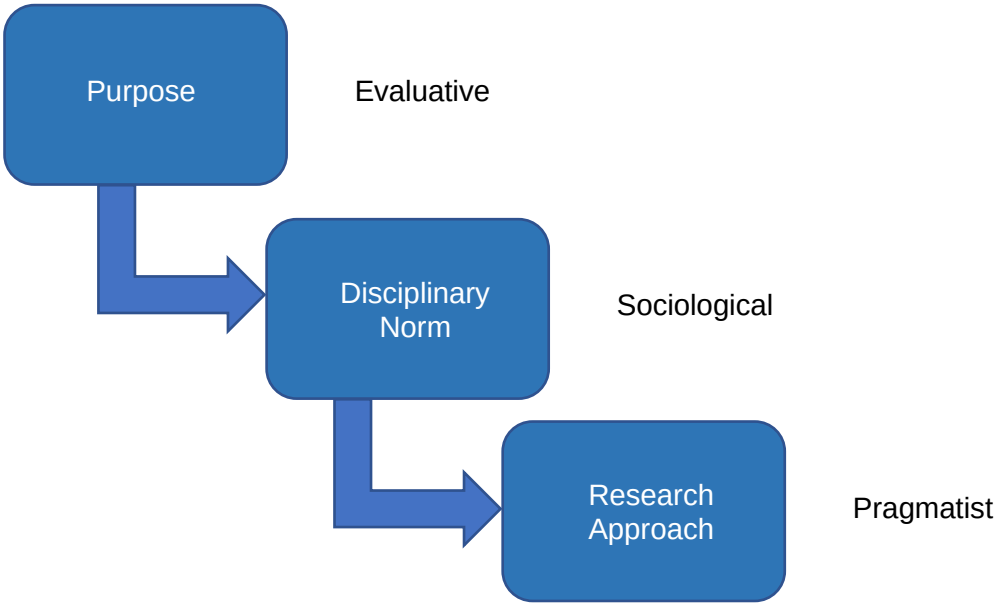


Figure 17 Case Study Research Approach

Working closely with, and active in, the subject matter as a professional practitioner, I have embarked on a journey of professional work-based research, the phenomena of interest being individuals, structures and processes. Data collected will be centred on interviews, documents and observations.

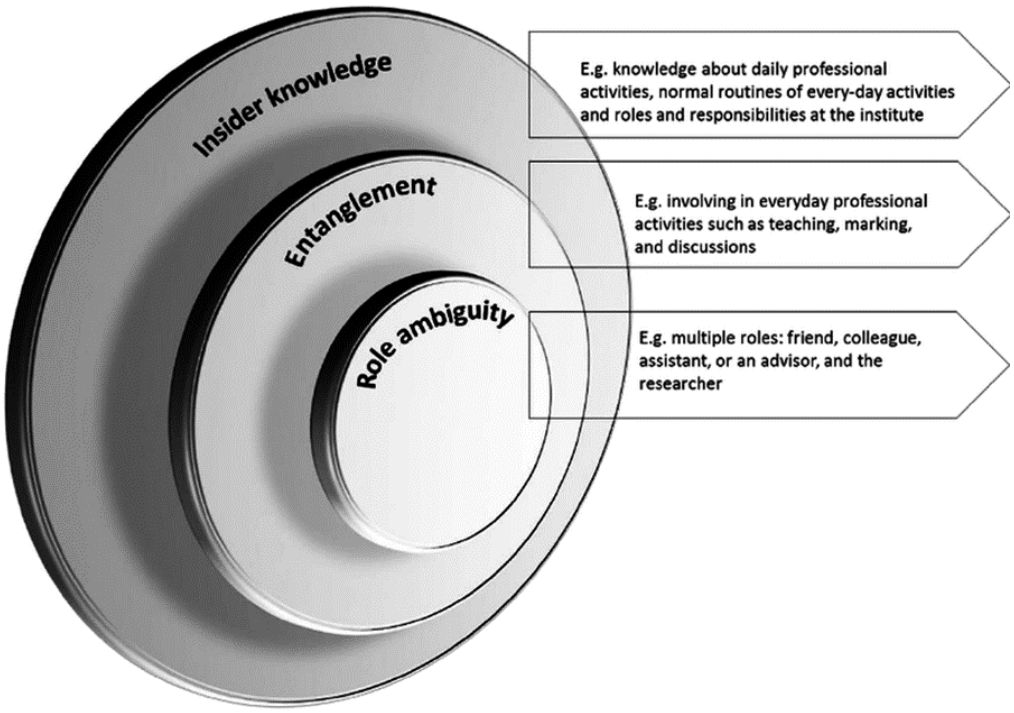


Figure 18 Methodology Structure of the Case Study

My analytical strategies will invoke the use of constant comparison, keyword analysis and thematic analysis (Appendix 24). This will be an exploratory Yin (1994) piece of work to gain an insight into an internal company issue that will have wider implications within the industry as a whole. My approach was described by Yin where he suggests that: 'A case study is an empirical inquiry that investigates a contemporary phenomenon within a real-life context, especially when the boundaries between phenomenology and context are not clearly evident' (1994: 13).

3.5 Understanding the Case Holistically

Tesco is Britain's largest private employer, employing more than 420,000 people both in the UK and the EU. It is constructive to make direct comparisons with other organisations of a similar size in order to better understand the complexity of management structures on such a large scale.

It is with this in mind that I have been drawn to the process models developed in the 1980s by (Andrew Pettigrew and Richard Whipp,1993), as outlined in Chapter 2. Their model arose out of their empirical research into why some companies in the UK performed more competitively than others and were better able to embrace and manage strategic change. According to the model there are three essential dimensions of strategic change, which are Content, Context and Process (Figure 3.4). These dimensions roughly translate as:

- The content or the 'what' of change (objectives, purposes, goals)
- The organisational context of change (internal and external environments)
- The process or 'how' of change (implementation).

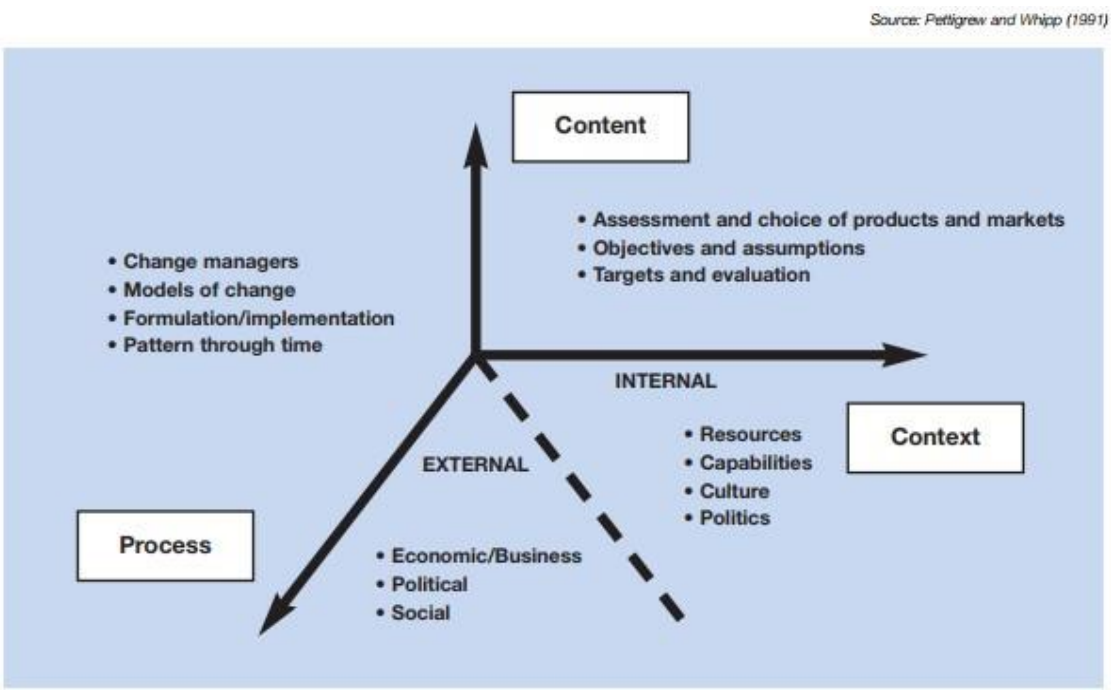


Figure 19 Understanding strategic change, reproduced from Iles and Cranfield, 2004

Strategic analysis typically begins by looking at the dimension of content. This covers the components of the organisation's strategy: e.g. financial, technological, marketing, human resources and governance. It includes key objectives, built-in assumptions and expectations, targets, the sources of drivers of strategic change, and methods and rules of evaluation.

The analysis then moves on to the dimension of context. This refers to ways in which the organisation is configured. The context can be divided into two categories:

- Internal context includes the organisation's structure, culture, distribution of power, micro-politics and internal capabilities.
- External context includes wider elements of the organisation's environment, including the economic, political, legal and social contexts in which it operates. If the external context changes, the internal context must respond concurrently.

After analysis and discussion of content and context comes the dimension of the process, the practicality of how individuals, groups and organisations embrace (or resist) change over time (White and Sabarwal, 2014). Process issues, it is argued, acquire particular significance in large organisations where, 'energy and capabilities which underpin [service change] cannot be conjured up over a short period of time through the pulling of a single lever' (Pettigrew, Ferlie

> and McKee, 1992). Moreover, in organisations of various types in the history of the private and public sector often has a prominent role in people's thinking: 'The past weighs a heavy hand in determining local perceptions, and layers of competence emerge only slowly to enable and protect champions of change' (Ibid.: 275). Gilkey writes that: ''According to this model, the astute manager is constantly scanning all three dimensions and will see to it that a management team is created that ensures that all dimensions play their due part in strategic decision-making and that no single dimension dominates thinking' (Gilkey 2014: pp1044-1052)

Like other models which adopt a holistic perspective, the Content, Context and Process Model (CCP) requires as much attention to the interrelation of its constituent parts and furthermore their relation to the whole, as it does to the individual components themselves. Again, like some other holistic models, such as The Fifth Discipline (Senge, 2006), CCP is best considered as an 'umbrella' approach to leading, managing or influencing change rather than as a prescriptive template. The model can also complement and incorporate other qualitative and quantitative change management tools and methods. At a basic level it can serve as a diagnostic checklist; more comprehensively, it can be used to design, monitor and assess a change management intervention or programme, or to help inform quasi-experimental before-and-after studies. In this instance, I will be looking at its value as a diagnostic tool.

CCP was largely developed through case studies, particularly longitudinal ones, i.e. those which follow up people and events over time, repeating interviews with key players. My case study will be largely prospective, collecting new cross-sectional data over time. Although this activity has lasted several years and inevitably, I have been reviewing progress retrospectively the longer it continued.

Case studies typically observe phenomena over time without manipulating them. However, I have had to intervene, often significantly. While this makes it even less likely that I can generalise from the case and identify causal relationships (i.e. this happened as a consequence of that) the trade-off is in the richness of the contextual content and process picture that emerges from this data. This case study aims to result in what the researcher Geertz (1973) calls 'thick descriptions. These are a means of providing the cultural context and meanings that individuals and groups place on their behaviour, words, and decisions and so on. Thick descriptions provide sufficient context so that someone outside the culture in question is able to make sense of the behaviour, words, and decisions taking place and so on.

A case study will afford me an opportunity to undertake an intensive analysis of my contribution to the development of both the driver safety team and its interaction with the driver population as a whole. It is my expectation that on observing behaviours I will be able to offer the company some short and long-term recommendations that should support the team and produce a higher degree of driver retention. This will hopefully produce ideas and opportunities for development and innovation.

The focus of the case study is the relationship between the aspects of the company that affect driver safety within Tesco Dot.com and me. The case study has allowed me to combine ideas and preferences to help form and frame the projects, offering a broader approach to social research in my position as an embedded action researcher.

I have had a great opportunity to study my relationship within a work environment and my influence, or lack of it, on the wider business operation. I intend to investigate in detail the effects of strategic decision-making by the leadership team on the wider workforce employed by Tesco Dot.com and its inherent impact on the driver population. There is a natural interconnection with processes and relationships within social settings that I intend to explore. As stated by Yin (1994), the case is a 'naturally occurring' phenomenon. It exists before the project and continues to exist after the research has finished.

I have found that many working practices are sustained by an inbred philosophy that 'this way is the best way as that is how we have always done it'! Within a developed company you should apply a strong mantra of 'plan, do, and review'. Regrettably, the 'review' element of this cycle is largely neglected, as it is usually perceived as the possible revelation of failure. This means that often the same mistakes are replicated with alarming regularity.

I am mindful that great care must be taken for me not to fall into the trap of making my own assumptions, based on 'I know best so surely I must be correct'. Great effort will be required not to bias the data collection to artificially generate the desired conclusion. To accomplish a well-balanced case study, I will need to be methodically disciplined in my approach to data collection as well as having to adhere to my planned approach. I will keep an open dialogue with my colleagues to help me maintain an equilibrium throughout the project. I intend to use a combination of qualitative and quantitative data in my methods to help build context and depth.

Although it was not my intention when I initially undertook this activity, I have found myself developing the framework of a longitudinal case study. This runs parallel with me finding an approach that avoids forcing answers to satisfy my questions in a neat cause

and effect application. I am aware that not all questions will be satisfactorily answered, if at all. This framework is an in-house study involving Tesco staff only and focuses on the van driving population, concentrating on the relationships and social processes adopted through time. This case study allows me to focus on the instances of a particular phenomenon, providing an in-depth account of events, processes, experiences and relationships within the workplace. What can be learned from the journey of development and innovation is that I can sustain further development within the company and industry as a whole by focusing on the 'case'; there may be insights and opportunities gained with wider implications for van safety that may not have come to light using different traditional methodologies.

For an understanding of any particular facet or function of any process or procedure within the workplace, particularly in a large organisation, each action point or process has to be studied in the context of its relationship to, and impact from, other processes or actions within the business as a whole; nothing is ever 'stand-alone'. This project offers an excellent opportunity to investigate in detail the impact of company decisions on the driver population and to support this end I will carry out a holistic approach to the case study.

I would like to explain why some outcomes came to be, so lessons can be learned and improvements made to the business in the future. One aspect could be the driver retention investigation and impact on the company's position on:

- Advertising
- Recruitment/process
- Development training
- Pay
- Driver experience / qualification

It is clear to me that some of the findings will be hard to generalise across a wide range of companies that employ vans in their fleet. This is due to the fact that there are countless variables within all operations that determine how structures and procedures are developed and implemented. Therefore, it will be difficult to make sweeping statements and recommendations from a single case study. Having little control over high-level decision making within Tesco Dot.com, my final case study project is a personal analysis of whether the policies and strategies have had an effect or impact on the now 17,000 drivers employed within Tesco Dot.com, a seemingly large number but which equates to 4.8% of Tesco's total workforce.

The poles below are not mutually exclusive, more a case of 'more this, less that'. I will be looking both at relationships and outcomes and at times my research may take me down the avenue of isolated factors, as a prelude to joining the dots and discovering the bigger picture in Chapter 5.

Table 2 Case Study Research Characteristically Emphasised

Depth of study	Instead of	Breadth of study
The particular	Instead of	The general
Relationships/processes	Instead of	Outcomes and end
Holistic view	Instead of	Isolated factors
Natural settings	Instead of	Artificial situations
Multiple sources	Instead of	One research method

The case study particularly lends itself to social settings within the workplace, specifically invoking inductive logic.

Table 3 Structure of Case Study following the discovery route

Discovery-led	
Description	Describes what is happening in the case study setting (e.g. events, processes and relationships).
Exploration	Explores the key issues affecting those in a case study setting (e.g. problems and opportunities).
Comparison	Compares settings to learn from the similarities and differences between them.
Theory-led	
Explanation	Explains the causes of events, processes or relationships within the setting.
Illustration	Uses a case study as an illustration of how a particular theory applies in a real-life setting.
Experiment	Uses a case study as a testbed for experimenting with changes to specific factors (or variables).

I will be selecting particular aspects of the Dotcom operation that should illuminate the journey of development and impact on driver safety.

I am explicit in my choice of subjects as there exist detailed data, both quantitative and qualitative, supporting robust analysis and investigation of van driver safety.

I have had circumscribed choices about which aspects of Tesco Dot.com I have been able to research. Being effectively sponsored or commissioned by the company, there was little latitude afforded to me on the flexibility and scope of my case study. On starting the case study, I was employed in the position of occupational road risk manager and soon found that my original subject of investigation had limited merits. I am now the driver safety manager and in consultation with my new adviser felt that a case study on the effectiveness of the company to improve driver safety was a more noteworthy objective.

The reader of this case study should be able to make an informed judgement regarding whether findings, themes and conclusions resonate with their own industry or operation. I am aware of the effects of social research as documented by Milgram (2009), notably the finding that people may be influenced by those they perceive in authority to do things which might otherwise conflict with their ethical values. I will be attentive to this potential risk throughout the project (Brent and Dent, 2012).

3.6 The Observer Effect

People are likely to alter their behaviour when they become aware that they are being observed in social science, unlike chemicals in a laboratory environment. It is only natural that people can:

- Display embarrassment
- Disguise normal practice, behaviour and be defensive

To overcome the effect researchers are generally advised to:

- Spend time on site, so that researchers become part of the furniture
- Have minimal interaction with those being observed

For people working day-to-day in the environment that I was researching it was important for me to be seen as a regular visitor and almost part of the fabric to help circumvent drivers' managers feeling embarrassed or disguising their normal day-to-day behaviour. In most eventualities I was able to observe without any undue involvement with those I was observing. However, on occasions where health and safety or company breaches took place, I was duty-bound to make an intervention. This being said, my interventions may have been made from a distance without confronting the individual directly.

In my own context, adopting a neutral observer role was not a viable option. This meant taking due note of the personal and political pressures that would most likely be brought to bear on someone in my job role within the company. That is to say, I was aware of these tensions as inherent in the chosen method.

3.7 The Nature of the Case Itself

My career within Tesco Dot.com started in 2006 and continues to the present. During this period, I have been instrumental in forging policies and processes that have benchmarked the company as a pioneer in van driver safety and best practice. This journey has not been an easy assignment and has been both challenging and rewarding. The constant introduction of new procedures and processes and their compliance, or lack of it, are of particular interest to me.

The development of the new safety strategies has been problematic as their foundations in law are set under the health and safety umbrella of 'what is reasonable' regarding the duty of care of your employees and the protection of the general public (Appendix 12). This has often led to decisions and has at times been difficult for on-site management to understand and implement, as with modern life the use of the internet is widespread, resulting in a dichotomy between information searched for and the contextual introduction of new policies and procedures. Managers are not confident in being supported to take the right action, i.e. recruiting to the preferred Tesco Dot.com Structure.

3.8 The Historical Background of the Case

In this section I recap some of the facts presented in my Introduction and will relate these to the particularities of the case I am constructing.

The considerable growth in the van population in the UK over recent years, fuelled partly by online shopping, has brought the safe employment of non-professional drivers into focus. There are now over 4 million vans on UK roads driven by a preponderance of drivers who only hold a car licence (DVLA).

Throughout Tesco Dot.com's remarkable expansion over the last 23 years, increasing from one van to 5500 delivering to 1.7 million customers per week (internal report), the senior management team has analysed its processes and developed innovative management solutions to allow the business to grow in a robust, controlled and sustainable fashion (Burke, Cooper and Antoniou, 2015). The guiding principle has been to ensure that profitability was achieved while ensuring that Tesco's employees were fully consulted and able to operate in a safe environment. My intention is to investigate the success of many of the new guidelines, policies and procedures put into place since 2010 and how future development can be prepared for Burke (1989).

At the end of 2004, van damage had reached a level of over £5000 per van per year (total of £10 million). It was clear that prompt and decisive action was needed to reduce the exposure of Tesco Dot.com staff outreach workers to occupational road risk, whilst

executing a business plan to reduce and bring back under control the spiralling costs of running, maintaining and insuring the van fleet (DaCoTA, 2012). The increasing expense of van damage had not been anticipated and was adding to the unforeseen costs of running the operation.

Since I started working at Tesco Dot.com in 2005 there have been many changes to working practices and processes that had manifested themselves throughout this period. The first major change to employment and driver development was the introduction of driver assessments (Appendices 13 and 16), validations, an accident review board and contextual speeding. It was clear to the management team that the dynamic change in approach to our driving population had to be undertaken as soon as possible in early 2006 (Meng *et al.,* 2012). At that point, Tesco Dot.com's employment criterion meant that you would probably get the job if you could walk, talk and claimed you had a driving licence.

To turn around this disastrous strategy and the ever-increasing van damage costs aforementioned, four processes were introduced. The concept of a driving standard when not legally required was a new one for Tesco Dot.com and many levels of management found it difficult to understand and implement. The subsequent tracking of driver behaviour regarding workplace practices, speeding, van damage and general conduct was challenging to introduce in terms of design, structure and implementation. There was a huge divide between the technology employed to gather data regarding driver behaviour, the subsequent training demanded as the result of understanding the data and the lack of ability/will of a store management team to impose performance management on the driver population.

At that time, in store a manager was more than happy to dismiss a member of staff for eating on the shop floor; however, they would be reticent and dismissive if a driver were found driving dangerously and little performance management would be required after the incident. The fundamental issue that prevented progress and development regarding the driver population was the fact that the Tesco Dot.com Department rarely appeared on the performance management scale of store managers. This in the world of Tesco was described as their performance management wheel. Unfortunately, this meant that the Tesco Dot.com Department, let alone the performance of drivers, was not part of the store manager's key performance indicators. This lack of focus by Tesco Dot.com facilitated an elongated, painful journey of change and development as there was little influence on junior, middle or senior managers to take a stand over difficult decisions to underpin change that was required. In recent years this has been rectified and senior managers are focused on the financial benefits that can be harvested from a successful Tesco Dot.com operation.

What was required in 2005-2006 was the introduction and development of a driver safety and compliance team that would be independent of all store activity. They would report directly to the store director of Tesco Dot.com and would act as an independent police force to ensure that change was focused and beginning to take place. The power struggle within Tesco Dot.com would of course always revolve around the dynamics of an independent group embarking on changing ways of working within Tesco, which had been embedded during the past 90 years. This change after 11 years has now started to happen; however, the constant friction, battle, miscommunication, misunderstanding and preconceived ideas that come hand-in-hand with such a change are always present and never far behind the slow movement of expected change in innovation and the demands of a modern fast-moving business from a theoretical viewpoint there are three main types of leadership: authoritarian leadership, where the leader orders followers to do various tasks, democratic leadership, which allows the group share in decision making, and laissez-faire leadership, or 'do it as you like' (French and Lewin, 1939).

In business there are many types of management styles; within retail they range from transactional, transformational, directive, autocratic, democratic and strategic. There are also many variations of these main groups Kezer (2011). Strategic Management is a process whereby the Leadership team renovate strategic ideas and make effective decisions for an aspiration and plans on how to achieve such a goal and objective to develop the future of the organisation Smith (2016). This style is found in many large organisations.

Much of the dynamics of change within Tesco Dot.com has been as a reaction to the changing demographics of modern retail methods. It is only in recent years with the boom in online shopping and the general use of the internet fuelled initially by Amazon that there has been a marked increase in the need for home deliveries. As part of this need, which has been recognised by the central government, there has been a dramatic increase in the number of vans registered on UK's roads, now topping an estimated 4 million. Tesco Dot.com alone covers over 120 million miles a year to fulfil the needs of its online customers; however, this still does represent a marked decrease in the overall carbon emissions involved in such transactions.

The regulations concerning online home shopping were very few and relatively sparse; these are covered in further chapters in this case study, but here it is important to note that the majority of the work and expense undertaken by Tesco Dot.com to develop and innovate the safety of van drivers has been the result of internal policy and decision making, and not demanded by legislation or government edict.

It has been a constant challenge to develop data collection, strategy policies, new vehicles, PPE and many other aspects to situate Tesco Dot.com as a ground-breaking organisation. To really understand and change the culture of a business, you need to become part of that business, understand its functionality, demands, culture, ethics and its vision. As an outside company, training organisation or researcher, you will fall badly short of your expectations if you expect to stand on the side-lines looking in and produce research that is clear, defined, workable and based on reality within the culture of that company (Miles and Huberman, 1994). One of the key issues with having sponsored research, or for that matter external research, is that most large organisations are somewhat sceptical, timid or blinkered as to what is a reality, the best option or the worst option. The best example I can give of this would be effectively the emperor's new clothes, an example of herd behaviour in ignoring the obvious and failing to challenge leadership arrogance.

3.9 Physical and Temporal Setting: The Bounded Case Study

The setting of my study will be internal, and this will determine the nature and scope of the case. For example, documents will not have been published and are for internal use only. I will also be keeping an eye on the external environment, e.g. policies and regulatory frameworks, and its impact on the internal organisational setting. It is my objective to investigate how decisions have been made relating to Tesco Dot.com over the past 10 years and the consequences of these actions so that I am in the position to analyse and develop organisational strategies as a result.

Merriam (1988) and Yin (1994) outline a number of essential features of a case study that support my classification of this activity as a 'bounded' case study. A case study tends to be bounded, which means that it is focused and intensive as well as narrow in scope. It also means that the case has clear boundaries or limiters. For example, measures such as the number of people who might be interviewed, the number of documents that may be reviewed or the number of observations that might be made, should all be finite.

A benefit of using a bounded case study research method is that it usually applies frameworks to manage contextual variables, e.g. the use of Content, Context and Process (CCP) and with the Political, Economic, Social and Technological (PEST) models. As described at the beginning of this chapter, my case study has been structured and framed to facilitate a holistic approach and it is my intention to describe the whole of the case as well as the relationship of the different parts in relation to each other and this whole.

3.10 Economic, Political and Legal Influences on the Case Study

Tesco likes being seen by government departments and society as a whole as a 'Blue Chip Company'. The company cherishes its brand reputation; a great deal of importance is placed on the dependability of a legal operation that is seen to be above and beyond what is expected of a smaller, locally run operation. As with most major companies in the UK, Dotcom is either highly regulated or there is a governmental expectation that your house is in order and risk to employees and the general public is minimised as far as practicable.

There is little effective legislation that controls the movement of van drivers, as their vehicles do not exceed the 3.5 tonne weight limit that would then activate the need for Tachographs and EU driving regulations, *(Transport Act*. 1968, Driver and Vehicle Services Agency, 2016). What does have to be followed is GB domestic driving regulations, which are clear and unequivocal; the onus is still very much with the company to develop a compliant operation (Appendix 15). A good example is the legislation which states that: 'Periods of rest must be adequate' but leaves the period open to interpretation!

3.11 Other Relevant Cases Studies

The use of the case study method to explore organisational change, including through the use of insider or ethnographic research methods, is well established Yin (2009). There are also a number of case studies that have already been carried out in relation to driver safety, including van driver behaviour, such as that of (Rodriguez *et al.,* 2006). While there are some studies which examine driver behaviour using naturalist data, such as (Dingus *et al.,* 2016), no case studies of driver safety were found in relation to van-based operations that had been conducted by an insider researcher (see Chapter 2). The combination of approaches that makes up the present study must, therefore, be regarded as tentative and exploratory. Any similarities and differences between this and other cases will depend on recognising certain specific features of cases, some of which may be unique to the present context.

3.12 The Informants who Show the Case

A key benefit of a case study is that it facilitates the use of multiple sources of evidence allowing the investigation of a broader range of historical and behavioural issues (Stake, 2002; Yin, 1993). Having such a rich source of diverse data facilitates the development of converging lines of inquiry. Where there is not convergence of evidence, it is compiled in a linear fashion, for example a site visit followed by findings and then conclusions. Convergence, on the other hand, has the effect of a spider's web. Around the spider's

web would be your areas of interest, such as documents, records, interviews, focus interviews, surveys and observations. The end result is in the centre with all the various avenues of data collection feeding into this central point.

3.13 Ethical Considerations

I am aware that in case studies and general research involving qualitative and ergonomic methodologies, in particular those that are work-based, ethics are key to a successful research project. Although my project is in-house and only involves Tesco staff and personnel or third-party suppliers embedded within Tesco, the fact that I am having conversations and capturing data (through questionnaires with both individuals and groups) means that the awareness of potential conflict of interest and misunderstanding is foremost in my mind. O'Reilly (2005) argues that ethical considerations should not be a reason not to conduct research but that such studies should be kept reflective and critical. I intend to keep my role as an insider researcher clear so both parties, the subject of my research and me, are transparent with regard to my/their participation and role within my investigation.

I am extremely mindful of the remit of the Data Protection Act that is enshrined in legislation and of keeping the anonymity of the participants in my research. Although there has been a migration of both staff and management throughout this process, all have received adequate training in the company's processes and protocols that they are expected to adhere to. I intend to keep to three key principles:

- Respect the rights and dignity of those who participate in the research project
- Avoid any harm to the participants arising from their involvement in the research
- Operate with honesty and integrity

A fundamental aspect of this case study which shapes ethical considerations is the fact that while one of the ultimate goals is to increase the safe driving behaviours of individual drivers, the in-depth investigation will be focused on data pertaining to group behaviour overall. This will be related to management policy making and decision making, rather than that of individuals, regional groups or any other small grouping within the business. All data will normally be anonymised, except in cases where, for instance, an awareness of the part of the company or its location is vital for the understanding of the data.

It is my intention that the interests of participants should be protected; those who contribute to research as informants or as research subjects should be no worse off at the end of their participation than they would be at the start. Their anonymity will be guaranteed and the feedback and information they provide will be invaluable regarding the larger scale of the project. It is equally my expectation that I avoid deception and misrepresentation and every effort will be made to ensure that my research is open and explicit in its direction and structure. Participants will give informed consent and all those involved in the research will be aware of the fact that they have the right to withdraw from the research at any point without this affecting them.

Specifically, experience has taught me that within the context of my own work approach and set of behaviours, I would consider myself to have a strong, personal work ethic combined with a results-oriented attitude to change. Later I would come to recognise this as a commitment to the management principle of 'Plan, Do and Review' Rogers (2003).

To anticipate the more detailed discussion in a subsection, this approach can be illustrated by a model of thinking about change that is common in the reviewed literature of this thesis, seen in Figure 20 in a visualisation from the Auto-Cycle Union (ACU). Figure 20. This model encapsulates an idea about the process of change which I can see in retrospect was exemplified in the way I adapted to and managed my recovery from personal injury.

In Figure 20 we can see a typical development process starting with the plan, where you set your objectives, through to the implementation phase. The next stage is pivotal as what has actually happened is reviewed. The result of this review is the improvement phase where best practice, development and innovation can be implemented.

Figure 20 Example of the Development Cycle

In an everyday commercial business context, this often translates into having a type of performance management predicated on managers and employees having a shared 'good enough' grasp of the business. This includes the organisational and communications strategies underpinning the business's purpose and how these fit together into an overall process of improvement (DaCoTA, 2012).

When working with external organisations at any given stage of the cycle, you must tailor how you communicate to your audience or customers and this may differ from the communications you apply internally. The same principle applies to the strategic planning and implementation of staff training and development programmes, which need to be adapted depending on whether they are internal or external. According to Michael Armstrong:

> A motivation is a reason for doing something. Motivation is concerned with the strength and direction of behaviour and the factors that influence people to behave in certain ways. The term "motivation" can refer variously to the goals individuals have, the ways in which individuals choose their goals and the ways in which others try to change their behaviour. (Source: Armstrong, 2014: p 182).

The core content of any particular type of training may stay relatively constant, depending on the task or job, but how you embed the understanding of that training will vary from organisation to organisation, as well as from region to region. A range of contextual factors, therefore, including culture, resources, technology and socio-political environments will have an effect on how training content should be delivered and will be received. It may help to elaborate conceptually on this here, as these contextual factors have played an important part in my developing an understanding of my role and of the project I went on to design. This makes these factors an important influence on its methodology.

Home delivery is a relatively new concept within the UK and has only really developed over the last 15 years. Although there has been a clamour to provide the public with a successful proposition, a concept even as inviting as home shopping will eventually be required to make an operational profit, or at least become an integrated format within the parent organisation. The relationship between profit and best practice for safety and compliance can often seem a fractious one, especially a bespoke, UK-wide operation such a Tesco Dot.com. Typically, an analysis is used to assess the effect of environmental factors on an organisation. A well-conducted PEST analysis (which considers Political, Economic, Social and Technological aspects) helps you determine how these factors will affect the performance and activities of your business in the long-term, by considering those that help and those which impede progress. These are subjects that I have referred to in the previous chapter, in addition to using McGrath's study where I have used a diagrammatical image seen on the next page. From here, work can begin on how the organisation needs to respond to these factors or forces. While all of these contextual aspects are important in relation to my project, ecological factors, legislative requirements and industry analysis assume greater significance and I touch on some of these later in this chapter.

In addition to these strategic dimensions impinging on the workplace, what we might call 'the people factor' (or human resource management) is critical, as it is through people and the workforce, they comprise that strategies, products and services are delivered. Various types of workplace leadership and 'people management' have been construed (Bennis and Nanus, 1997), and I have either tried or been the recipient of several of these over the course of my career. Without a doubt, one of the strongest models for leadership that I have come across has been that of leaders as influencers, as those who embody their values and behaviours in a highly self-conscious, deliberate and ethical way. (Bennis and Nanus, 1997) state, "leadership is the most studied and least understood concept of any in the social sciences" (p4).

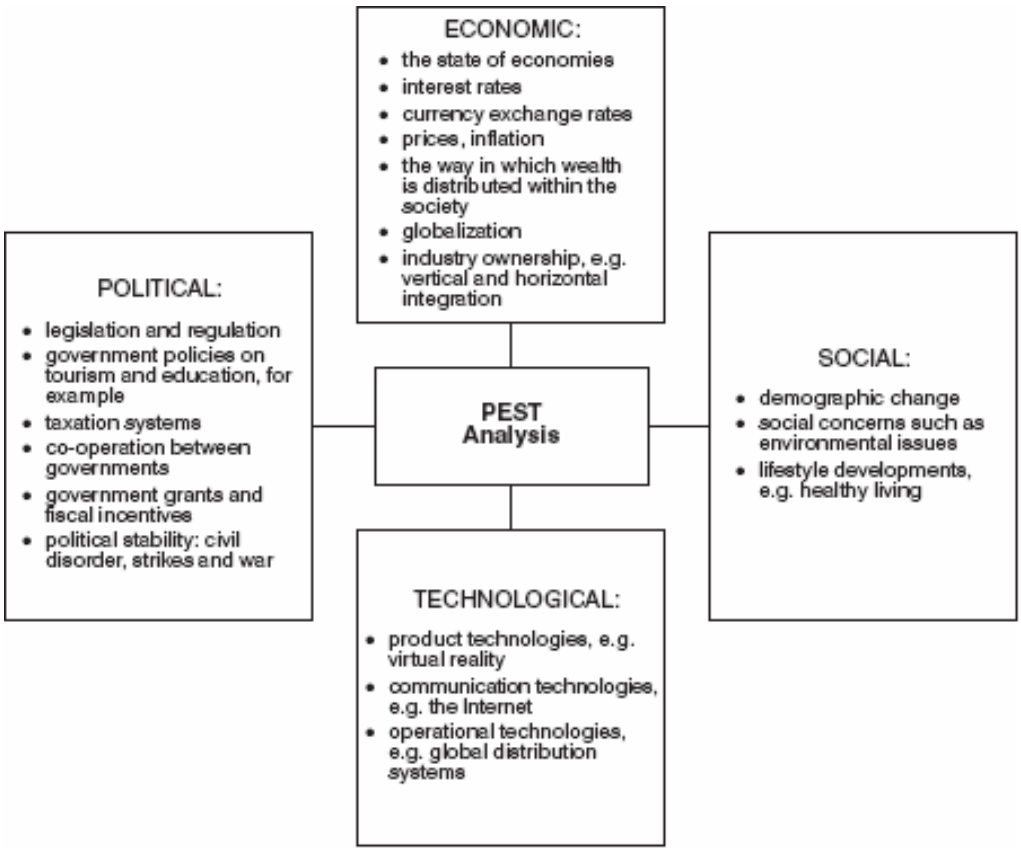


Figure 21 A typical example of a PEST framework, 2013.

Source: McGrath, R

That said, one of the keys to understanding is, I believe, reflection on practice. I have discovered throughout my professional career that it is essential to observe and reflect on your own performance and act within the highest professional code of conduct. Firstly, this allows you to secure the trust of your colleagues and then to enable them to work as individuals who are bound together by a common aim to achieve a common goal Robert (2006). Within the workplace, I have worked with many well-intentioned colleagues who wish to execute their duties to a high standard; however, many have seen little or no need to challenge the standards of others or themselves. This has had a negative knock-on effect and in the lack of evaluative intervention, this approach becomes like a laissez-faire form of leadership Brown (2002). Laissez-faire leadership, along with autocratic styles of leading, outnumbers the democratic model in business, which I believe is actually the most effective and to which I have aspired. In the circumstances described where no reflection is taking place, there is little or no motivation for an individual or group to aspire to achieve and maintain a high standard of performance and short-term individual career gains have tended to mar collective high achievement.

Variable experiences of different standards and styles of leadership over the years have been a cautionary lesson as well as an incentive to personal reflection and to develop a deeper understanding of what is required to facilitate change and innovation in self and others, a topic which is explored in this project.

3.14 Thematic Analysis

Thematic analysis is used in qualitative research and focuses on examining themes within data. This choice of research is of interest to me as it lends itself to a holistic approach of a framed case study within a large organisation (Miles and Huberman, 1994). Qualitative data analysis operates through the systematic gathering of data and proceeds inductively; often drawing on whichever data comes to hand in order to explain phenomena. It differs from grounded theory Charmaz (2005) as it does not seek to work towards a theory.

This method emphasises organisation and rich description of the dataset. The thematic analysis which it encourages goes beyond simply counting phrases or words in a text and moves on to identify implicit and explicit ideas within the data. Coding is the primary process for developing themes within the raw data by recognizing important moments in the data and encoding it prior to interpretation. The interpretation of these codes can include comparing theme frequencies, identifying theme co-occurrence and graphically displaying relationships between different themes. In this study, coding will be carried out manually.

3.15 Documents

One of the areas that I intend to acquire interesting data from is the exploration of documentation within the framework of the company. As an online company, Tesco Dot.com has armed itself with a plethora of reporting suites. The reports are detailed and comprehensive providing a rich harvest of qualitative and numerical data. They range from high-level national reporting tools to the level of individual drivers. In this research it is my ethical duty to ensure that the range of reports and associated data has a high level of anonymity attached to them.

Documentary analysis can take many forms. Prior (2003) suggests these forms can include content and thematic analysis but also analysis of documents in terms of their use and function as resources, that is, how documents are used in practice by human agents towards purposeful ends. In this latter case, the focus is less on how the document has come into being or on the minute interpretation of meaning, but on how documents are ‘recruited’ by people for specific purposes. While what is contained in the various

documents is of importance, and may bear the hallmark of covert as well as overt messages including in terms of the 'evidence' they muster to guide action and decision making the emphasis in this case is on understanding how documents are used in episodes of social interaction within the company. For example, documents may help elucidate the train of events that are set in motion when an email is sent and received.

Organisations and companies of all sizes are keen to make available strategic plans, mission statements and logos online so that they are openly communicating with the general public. With the expansion of websites in particular, gaining information and data on companies and groups has become an easier activity. This open environment for accessing documentation lends itself conveniently to an embedded action-researcher such as myself working on an in-house case study.

It would be prudent to consider Platt's (1981) suggestion for determining when a document is genuine or when its authenticity requires closer scrutiny. According to Mogalakwe (2006), close scrutiny is required when the document:

- Does not make sense logically or obvious errors can be observed
- There are internal inconsistencies in terms of style and content
- There are different versions of the same product
- The version available is derived from a dubious, suspicious or unreliable secondary source
- It has been in the hands of a person or persons with vested interests in a particular reading of it

3.16 Observations

In this research I will amalgamate the observations made around my management duties. I will observe the drivers when they are working in and around the operation. In addition, I go out with drivers on their delivery routes to observe first-hand the complexities and challenges of their tasks. Whilst in the van with drivers there is an excellent opportunity to interact and gain valuable insights regarding their thoughts, opinions and beliefs regarding the operation as a whole. However, feeding this information and data back to respective management teams may be challenging. My approach to managers and support staff will be very similar. I will observe them in the general working environment, and, in addition, I will attend meetings and have conversations with small groups or individuals to gain as much in-depth information as possible. I intend to extend my observations to our head office where I will be engaging with some of the senior management team.

3.17 Overall

It is important the findings of a case study are all inclusive and the results are shared openly with all stakeholders and participants within or affected by the case study.

Table 4 Source of Evidence, Benefits and Disadvantages of Case Studies

Source of Evidence	Benefits	Disadvantages
Documentation	Stable so can be reviewed repeatedly Unobtrusive as not created as a result of the case study Exact references, and details of an event, contains exact names, references, and details of an event Broad coverage, long span of time, many events and settings	Can be difficult to find and retrieve Biased sensitivity, if the collection is incomplete Reporting bias reflects the unknown bias of the author Access may be deliberately withheld
Archival records	Same as for documentation Precise and usually quantitative	Same as for documentation Accessibility due to privacy
Interviews	Targeted focus directly on case study topics Insightful, provides perceived casual inferences and explanations	Bias due to poorly articulated questions Response bias Inaccuracies due to poor recall Reflex response as interviewee gives what interviewer wants to hear
Direct observations	Reality covers events in real-time Content contextual, covers context of “Case”	Time consuming Selectivity as broad coverage is difficult without a team of observers The reflexivity event may proceed differently because it is being observed Cost-hours needed by human observer
	Same as direct observation Insightful of interpersonal behaviour and motives	Same as direct observation Bias due to participant Observer’s manipulation of events

With the increase of information online being used as a source for data collection, there is a need for caution as unverified documents cannot be trusted as a verbatim record, or as unedited, or as edited by the producers of the document. Such documents that fall into these criteria are:

- Email correspondence, memoranda, letters, and other personal documents such as diaries, notes and calendars
- Minutes from meetings and announcements, other written reports of events and agendas

Progress reports and other internal records, proposals and admin documents

- Formal studies or evaluations of the same case that you are studying
- Articles appearing in the mass media or in community newspapers, news clippings and social media.

Project Methodology Plan											
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Investigate Database											
Survey of Drivers											
Interview DSC Managers											
Document Analysis											
CPC Training											
Work Place Observations											
Writing Up											

Figure 22 Methods Plan for the Project

3.18 Questionnaires

An integral part of my case study mixed-methods approach will be the use of data collected from interviews and survey questionnaires. Some of this data, e.g. from surveys, will be collected routinely as part of my working role.

I was hoping that questionnaires would be extremely useful as I intend to collect large amounts of data from many drivers who probably answer set standard questions honestly, facilitating the cross-reference and collation of replies, which forms an extremely useful data-gathering source.

A well-designed questionnaire (Appendix 2) will facilitate the capture of macro, micro and meso level data and information.

I was determined to utilise a planned training day to capture data via the use of a questionnaire. The drivers in question are usually very vocal in the workplace in airing their criticism of the company and how it is operated. That said, when offered the opportunity to voice their opinions in an open forum with management they would be reticent to have their opinions recorded.

This is why I decided to adopt the medium of questionnaire to harvest data from the drivers. The fact that I was able to introduce myself in person to the drivers clearly stating that the questionnaires are anonymous and that it was for my University project and not a management tool was met with great enthusiasm.

I used a mixture of open and closed questions to keep the participants engaged, facilitating an environment that encouraged honest and open responses.

An additional rationale for adopting the use of questionnaires was based on the recognition that there is a wide range of academic abilities within the driver work force, so asking for written answers would form barriers and minimise the opportunity of gaining valuable data.

The response from the drivers of having their opinion valued was very positive and no papers were spoiled. I stepped back from getting the questionnaires disseminated nationally as I was sceptical of the approach some of my colleagues would adopt that may compromise the data collected. The option of an online questionnaire was not robust enough at the time to make it a viable option for me to adopt.

3.19 Interviews

Interviews have been the mainstay of qualitative research for many years. The challenges faced by interviewers are designing and carrying out interviews constructed with critical attention, and time. Researchers face choices ranging from the interview content, conduct within the interview, the medium used to capture it, to how they will position themselves within the process.

The origins of interviews date from the early 1900s with the development of anthropological studies and ethnographic approaches. Some of the early researchers made observations while also conducting interviews (Bernard, 2017 and 2013; Stocking, 1983). These early researchers used interviews to question the meaning of experiences and to provide access to the context of the participant's behaviours Seidman (1991).

I will structure my interviews along the lines of in-depth interviews (Appendix 1). I have set questions, which allow the interviewee to express both detail and their opinion on the effectiveness of what was being asked of them by the company and on their ability to function within the company. I will be interviewing members of the DSCM whose role is to set and maintain the standards of driving that is expected within the company at each store or centre that they are responsible for. The interviewees cover a cross section of operational sizes and geographic regions to avoid bias and provide a greater level of context.

3.20 Structured Interviews

Within my case study, I intend to use structured interviews; each participant will be interviewed over a similar period of time using closed questions as much as possible, and every question that each participant is asked will be identified; each question will be identified that asked each participant. It is important to me that standardised questions are used to harvest as accurate a data collection as possible regarding the points of view of the participants in the interviews.

I was concerned that throughout conducting interviews with my colleagues they may be concerned about the possible after-effects of their answers and responses to my questions from the management team. My ethical challenge was to reassure my colleagues that responses would be kept within the confines of my project and would not be shared with managers or management or personalised in any way that would contradict the Data Protection Act.

3.21 Documentary Quantitative Data:

- Company reports
- Road safety reports
- Government reports
- Company database

The company now has a comprehensive reporting suite that can provide me with detail on every driver, van and event, each record to be interrogated in micro detail if required or to provide a national picture. The only disadvantage is that at present all data is presented and structured in a style for Tesco Dot.com-only examination and contemplation. This information will be represented in the study in a way that can be understood by the reader and made sense of by people outside as well as inside Tesco.

3.22 Combination of the Case

When undertaking a quality case study, there are two critical components that any researcher will have to attend to, which is the case study approach (drawing upon other research approaches) and the case presentation.

These necessarily work together in a coherent fashion in case study research. Thus, as discussed here, the case study is an approach to research that focuses on a specific situation within part of a UK-based company. It employs case study research methods that draw upon other research approaches. When cast as case studies, the other approaches are generally more holistic, particularistic, contextual, descriptive and creative

than they would be if applied to a more extensive rather than an intensive study of a given phenomenon. All this information is then documented in a contextualised ‘case report’. With this in mind, a well-constructed, bounded and holistic case study should provide the company with worthwhile recommendations and development for the future. As explained earlier, the mixed methods approach adopted here derives in large part from the philosophy of pragmatism and in this final section I touch on some of the main issues relevant to my own application of this.

3.23 Pragmatism Approach

Pragmatism is widely understood to have developed as a philosophical movement beginning in the United States in the early 1870s. Philosopher Charles Sanders Peirce is given credit for its development Haack (2006), along with later twentieth century contributors (James and Dewey, 1931: Reck, 1984). The first use in print of ‘pragmatism’ was in 1898 by North American philosopher and psychologist William James, who credited Peirce with coining the term during the early 1870s. James regarded Peirce's ‘illustrations of the Logic of Science’ series (including ‘The Fixation of Belief’ (1877), and especially (1878)), as the foundation of pragmatism.

Pragmatism is a paradigm that advocates the use of mixed methods in research, which ‘sidesteps the contentious issues of truth and reality’ (Feilzer, 2015: 8) and ‘focuses instead on 'what works' as the truth regarding the research questions under investigation’ (Tashakkori and Teddlie, 2001b: 713). Research designs based on case studies tend to be more flexible than those in positive paradigms, for example, those used in a research laboratory. McKernan (1991:20) indicates that practical action research promotes human interpretation, interactive communication, deliberation, negotiation and detailed description while reducing measurements and controls (Masters, 1995). As McKernan suggests,” the goal of practical action researchers is understanding practice and solving immediate problems” McKernan (1991, 20). This resonates with my own stated research aims and goals, see also Heinze (2008). Goldkuhal wrote a distinctive work in 2012 where he described admirably the benefits of a modern case study as an exercise in pragmatism: ‘Qualitative research is often associated with interpretivism, but alternatives do exist. Besides critical research and sometimes positivism, qualitative research in information systems can be performed following a paradigm of pragmatism’ (Goldkuhl, 2012: p 135-146).

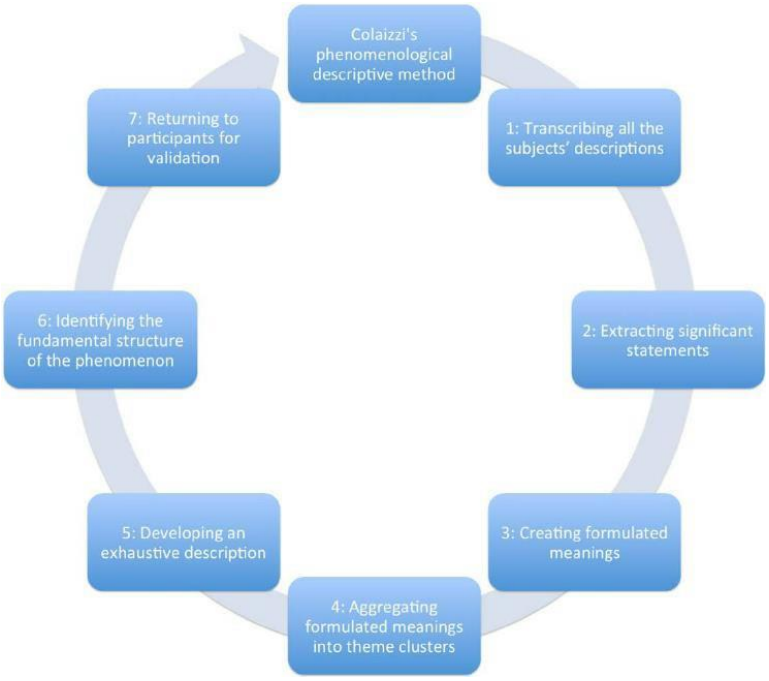


Figure 23 Example of Thematic Analysis

3.24 Summary

I intend to undertake a case study that has now been defined as a longitudinal case study. I will be working as an insider participatory researcher. Part of my methodology is to gain a better understanding of the effects of strategic change. My intention is to collect data from five main sources:

- Documents
- Drivers database
- Interviews
- Questionnaires
- In-work observations

My career within Tesco Dot.com started in 2006 and continues to the present day. During this period I have been instrumental in forging policies, processes and programmes that have benchmarked the company as a pioneer in van driver safety and best practice; part of my investigation is to gauge the effect of these systems.

I will be entering the workplace to engage with as many participants as possible while carrying out my normal managerial tasks. I will be focusing on two of our largest operations to gain as much detail and texture as possible by engaging with managers, support staff and drivers. I am aware that in case studies and general research involving qualitative and ergonomic, in particular work-based, projects, ethics are key to a successful project. Although my project is in-house and only involves Tesco Dot.com staff

and personnel or third-party suppliers embedded within Tesco, the fact that I am having conversations and capturing data through questionnaires with both individuals and groups means that the awareness of potential conflict of interest and misunderstanding is foremost in my mind.

I am looking forward to the challenge ahead.

Chapter 4 - Project Findings

4.1 Introduction

In this chapter I discuss, critically analyse and interpret the findings of my work based research project. My position as an embedded professional practitioner throughout the project has provided a framework for data collection enabling me to record patterns of thoughts and behaviours relating to all participating groups within the case study.

I intentionally gathered four types of data in order to provide a comprehensive collection of data sets:

- Questionnaires
- Observations
- Interviews
- Documents

My data gathering was planned so that it would be collectable within a developing and dynamic business environment. I was aware that over the length of the study the business would most likely enforce changes, so I would need to be active and agile in responding to inevitable transformation and innovations in action. I was able to differentiate between internal and external documents. I designed and constructed interviews and questionnaires to allow for data collection in a non-threatening and relaxed environment, as drivers are historically sceptical of anything generated from management, and with a high level of ethical consideration to alleviate their concerns.

I utilised internal reports and conversations to capture data as well as works-based observations. By adopting a broad base of data collection methods, I have been able to give the project depth and texture.

Whilst reviewing the effectiveness of the drivers' risk database and engaging in conversation and interviews with managers, this opened a dialogue that was both informative and constructive. This is the case both in its criticism of the database and the suggested changes that would be recommended to the database.

I structured my case study in the shape of the insert data collection methodology, identifying the groups that I wished to study (managers and drivers). I designed a strategy that matched my position as an insider professional practitioner, and this facilitated my data capture and real-life observations. I designed and constructed interviews and questionnaires to allow for data collection in a non-threatening and relaxed environment,

with a high level of ethical consideration. I utilised internal reports and conversations to capture data as well as works-based observations.

Whilst reviewing the effectiveness of the drivers' risk database and engaging in conversation and interviews with managers, this opened a dialogue that was both informative and constructive. This is the case both in its criticism of the database and the suggested changes recommended.

Over the course of the research changes did indeed happen, some expected and others in more serendipitous occurrences.

My project started in the spring of 2012 and was expected to end in 2015-16. The case study as my chosen framework of investigation remained constant throughout the life of the project. Initially I had a clear vision that our drivers' database would be the core of my case study. However, approximately six months into the project it became clear to me that the database was not fit for purpose and was not the most suitable subject in isolation for my manager, I widened my investigation to cover driver safety within Dotcom, investigating the act of changing people's perception of the value of driver safety.

4.2 Observations Structured and Neutral

I intended my observations of driver safety to be 'structured and neutral' as opposed to 'unstructured and artificial'. I found that this approach in conjunction with researcher observation and practitioner mentoring/teaching in situ was advantageous. Being a qualified driving instructor and being seen as the company expert in this field gave me great traction-particularly with the drivers.

Fortunately, I was able to spend large periods of time working in four of our biggest operations, presenting me with many opportunities to be a first-hand witness and to actively become involved in the day-to-day operation. These opportunities continued for the duration of my project. My findings were conveyed to my line manager by phone on a regular basis. I communicated rarely to a wider population by email (Appendix 22) as this usually created a negative response from the senior team managing the operation.

I am specifically interested in the safety component of our drivers in the workplace. This pre-existing interest in the safety of drivers and in particular outreach drivers naturally guided me to investigate the possibility of an existing divergence and contrast between the behaviour of the drivers and managers. I would research whether this was the case both at store and in relation to the reports generated and developed within the company relating to each individual driver and operation on a macro, micro and meso level. Whilst

working within the business I investigated the possible contrast in the data gathered as well as any effect that this data may have had on the drivers, local managers and the leadership team. I observed in order to ascertain if there had been any marginal or significant change in the behaviour or focus of any group as a response to the data shared within the business.

Throughout my investigation, I was careful to pay attention to the ethical implications of my role as an embedded workplace professional practitioner whilst also executing my role as the company's Occupational Road Risk manager. Although my job role has little effective rank within the company, the uniqueness of my knowledge allows me to be strategically influential within the business, often relied upon as a trusted consultant and knowledge reference point within Dotcom and the wider van-based industry. It was because of this position as in-house expert that the company requested me to gain my doctorate in work-based learning. This would allow me to become the recognised expert within my field, to support, steer and maintain the company within the highest levels of driver safety. Whilst gathering my data I interacted with several hundred drivers and a cross-section of:

- Senior managers and directors
- On-site senior managers
- On-site managers and team leaders
- Local and national support teams
- Trade union representatives of various levels

I have structured the analysis and discussion by first providing an overview with a project timeline and then individual chronologies for the major components of the research in terms of four main areas of investigation: the database, telematics, influences on Tesco Dot.com and my life in Tesco. Table 5 Project Timeline represents these main areas of investigation from the period between 2010 and 2016, although some of the history of the innovations dating from 2008 is also included. This period is before my project officially began and is drawn on to help make sense of unfolding events that continued to impact on the project. The use of temporally organised figures of this kind is an established practice in longitudinal, chronological case study research Rainer (2011) and Table 5 displays in expanded diagrammatic form an overview of the case compared to that in

Figure 22, Methods Plan for the Project. Because this is a case study about innovation, it is important to stress that within the study there are two discrete, but interconnected innovations introduced at different but overlapping times, at differing time scales and with separate outcomes. It is important to state therefore, that the start and end points of the

case study have been determined pragmatically, not least by my role in this research (see Chapter 3).

Figure 25 has two axes: the horizontal is temporal and shows developments and changes over time, while the vertical shows the main sources of data and interpretation as well as the main influences impacting on the case. Key aspects of the three main models of my methodology are brought together in Figure 25 as an organising device for presenting and analysing the data: The Content, Context and Process (CCP) model (Pettigrew and Whipp, 1991), the diffusion of innovations Rogers (1983) and the innovation 'journey' (Van de Ven, 1999). In the horizontal axis diffusion Rogers (2010), 'journeying' (Van de Ven, 2017) and patterns through time (the process dimension of Pettigrew and Whipp) are brought to bear on events and data, while in the vertical axis the content and context dimensions (Pettigrew and Whipp) and the individual as manager of innovation and change (Rogers) are brought to bear.

The first major stage of data collection was my investigation into telematics and its use and possible misuse within the business. A chronology of events is followed by a more detailed analysis relating to telematics and its use within driver safety initiatives in Tesco Dot.com.

The second stage of data collection stemmed from my findings from an investigation into the database (Appendices 4 and 18). The reflection on this process here commences with the chronology of events, followed by detailed analysis considering the benefits and disadvantages of the database as well as how it has impacted on the business and driver safety. These stages are then followed by presentation of data from observations, interviews and a survey questionnaire, which were conducted at different periods, predominantly towards the end of the case study. This data presents a series of snapshots on the journey of the two main innovations: the introduction of telematics and the driver safety database focused on here. Specifically, they look at selected findings from:

- Interrogating the functionality and effectiveness of our driver database
- Observations of the safer driving report (partial product of the database) and its problematic use by managers
- Interviews conducted with driver safety and compliance managers which explored at a given point how they viewed the database, its benefits, disadvantages and what improvements they might make
- Results of a drivers' questionnaire that I conducted in 2014 involving approximately 122 drivers

Table 5 Project Timeline

Area of Investigation	2008	2009	2010	2011	2012	2013	2014	2015	2016
Database	Database 1	→	→	→	→	→	→	→	Development of new database
Telematics	Telematics programme	→	→	→	→	→	→	→	→
			Stop report	→	→	Safer driving report	→	→	→
Influences on Tesco Dot.com			ARB process 4.2 tonne gas vans in location Z Excellent Delivery 3 Fatal RTA Bronze 3	Excellent Delivery 4 → → →	Excellent Delivery 5 7 tonne gas vans in location Y CPC Training Fatal RTA Bronze 4	Delivering our best 1 New Director Leadership team re-structure →	Delivering our best 2 New Director New Drivers Palm computer (REACH) →	Delivering our best 3 New Director x 2 New Bronze Training →	Delivering our best 4 New Director Company re-structure New SDS Device Dash cams in vans
My life in Tesco Dot.com	Occupational Road Risk Manager CFC South London	→	→	→	→	Head of Development Team Driving School New Line manager	→	→	Driver Safety Manager → →
			CFC's North London	CFC Kent	CFC East London			Company car's Driver safety	

Key :

ARB	Accident Review Board Programme	Database	Drivers risk database
Gas Vans	Ford Transit vans running on purified reclaimed gas from waste	REACH	Retail excellence at the customer's house
Excellent Delivery	National training programme for staff and managers	SDS	Smart delivery system
RTA	Road Traffic Accident	Bronze	Specialised driver training day (classroom and practical)
Stop Report	Report that flags up unacceptable driving behaviour (Telematics)	CFC	Customer Fulfilment Centre (not open to the public)

4.3 Telematics from 2010 to Early 2016

Table 6 Chronology of Events in Telematics

Year	Month	Event
2010	February	Telematics launched in CFC south London 20 vans
	March	Stop report launched
	April	Meetings with drivers to give visibility of their driving behaviour
	June	Continued instances of vandalising telematic black box
	July	Telematic data used for the first time resulting from fatal RTC
2011	March	Telematic black box moved from under the driver's seat and embedded by the engine to avoid vandalism
2012	August	Telematic data used in fatal RTC in London
2013	April	Implementation of Safer Driving Report

Telematics were first introduced to Tesco Dot.com in 2008 where initially it was used more as a fuel usage and driver behaviour report (Amarasinghe *et al.,* 2015). In 2010 the first attempt at the introduction of a driver behaviour report occurred and was trialled, initially in a London Customer Fulfilment Centre that I was responsible for. I then rapidly rolled out these changes across the entire estate (Azzopardi and Cortis, 2013). I contributed to a report of this trial called the 'Stop Report' (Appendix 9), which in 2010 was presented to the management team. Its scope of investigation was limited to analysing and reporting on speeding parameters rather than more comprehensive aspects of driver safety Wegman (1996). Parameter one was based on the speed limit (+10% +2 mph): this is the basic equation used by the police across the UK when drivers fall into the area of endorsement points on your licence, resulting from committing a motoring offence (Ayuso, Guillen and Nielsen, 2018). The second parameter was 20 mph over the posted speed limit, resulting in immediate suspension and disciplinary action that could end in dismissal.

In 2008, over the first few months that telematics was introduced, drivers treated this technology with a great deal of scepticism (Baecke and Bocca, 2017). Numerous sabotage events in which the telematics were deliberately taken off-line were discovered (Wahlström, Skog and Händel, 2015). This was the first time that the company had such a form of indirect insight into certain kinds of van driver psychology and behaviour and it responded by mandating change and innovation Mikulski (2012). The company's initial reaction was to invoke a tightened performance management process of monitoring and review spearheaded by me. This eventually included locating the telematics black box in vandal proof casing (Nilsson, Harms and Peters, 2001). My initial investigation in the first six months of 2010 found that there was a reticence by operational and HR managers to suspend drivers who had breached parameter two, and this led to inconsistencies both in discipline and performance management which undermined the principles both of fairness and of controlling or improving driver behaviour. I discovered that although prior to 2010 the company had developed driver safety workforce management processes and policies that were robust, legally compliant and agreed to with trade unions, the individual store managers exercised total control over their implementation. It was their decision alone as to who would be disciplined or suspended or ultimately dismissed. One store manager stated openly to me: 'I will never deprive an employee of their income through a traffic offence'.

During the period between 2008 and 2010 a fundamental lack of understanding and consensus about driver safety was a powerful barrier to change in the organisation's approach to improving behaviours in this area (Van Der Laan, Heino and De Waard, 1997). This lack of consensus about good driver and management practice led to wide discrepancies in leadership insurance approaches, ranging from the laissez-faire style evidenced in the store manager's statement above to a more authoritarian, albeit benign, approach of managers issuing final written warnings to drivers who breached parameter one (Davidson and Olsen, 2013). Inconsistencies in the behaviour and interpretation of individual managers, department heads and the determinedly non-compliant attitudes of many drivers created a toxic atmosphere that impeded adoption of this technological innovation, especially during the period between 2010 and 2015.

The drivers' initial approach to telematics changed dramatically after a fatal accident in mid-2010 when a young female cyclist died as a result of her colliding with one of our vans Green (2004). This unfortunate and tragic event occurred approximately a year and a half after the initial pilot programme introducing telematics into our vans in 2008, (Valerio *et al.,* 2008). Until this time, the telematics letterbox was seen as a 'spy in the cab' and created a very negative environment as far as the drivers were concerned Vakati (2015). My director

was made aware of the fatal incident when we attended a road safety event at the Millbrook testing ground. I drove immediately from the Midlands to Brighton to supervise events and to communicate with the Police.

However, during the first 48 hours of the investigation stemming from the fatality, police were able to inform us that unless significant new information came to light the driver would not face prosecution. This rapid pronouncement was due not only to witness statements but also, crucially, the telematics data which confirmed the driver's account of his behaviour (Husnjak *et al.,* 2015). This was a sea change in how telematics were viewed both by the driver safety compliance team and the driver population. The period just described can be considered one of early implementation. Rogers' theory about the diffusion of innovations (see Figure 24) namely, the innovation itself, communication channels, time, and a social system can be applied to this early stage narrative up until 2010 (Dixit, Thomas and Agarwal, 2016). It was evident to me that while the telematics innovation was in theory technically up and running, its characteristics were often poorly understood and not optimally implemented and acted upon. Indeed, they were very often effectively blocked or applied less than optimally at operational level.

Communication channels relied on a top-down and relatively opaque process of information sharing that enabled swift and accountable decision-making in some contexts but less effective and accountable decisions in others (Ampunan *et al.,* 2008). Moreover, I was aware that lateral, informal channels of communication via driver 'grapevines' about the value and purpose of telematics went unchallenged and uncorrected by managers and may have inadvertently encouraged sabotage (Grokop and Kuhn, 2016). Time and habituation seemed to play relatively little part at this stage in embedding the innovation, as it was not forming part of accepted practice. The social system, considered here as a culture of autonomous driver behaviour allied to autonomous decision-making at local level, evidently played a major part in the problematic diffusion of the innovation. Equally evident to me was the relative lack of what Rogers calls 'early adopters' among managers sufficient in number to create a critical mass for change. Despite my efforts in individual and team meetings and training programmes to cascade the benefits of telematics and recruit the 'late adopters', those who adopt the innovation once it has been tried and tested by others usually do so because not adopting it would simply be more trouble. Rogerian 'take off' thus took much longer to achieve than the smooth trajectory set out in the schematic representation of innovation in Figure 24 .

The telematics programme thereafter between 2010 and 2016 was predominantly a great technical success. Reports were accurate and easy to use, with regular updates to enrich the quality of the reports. However, technical functionality was not always equally matched by consistent take-up.

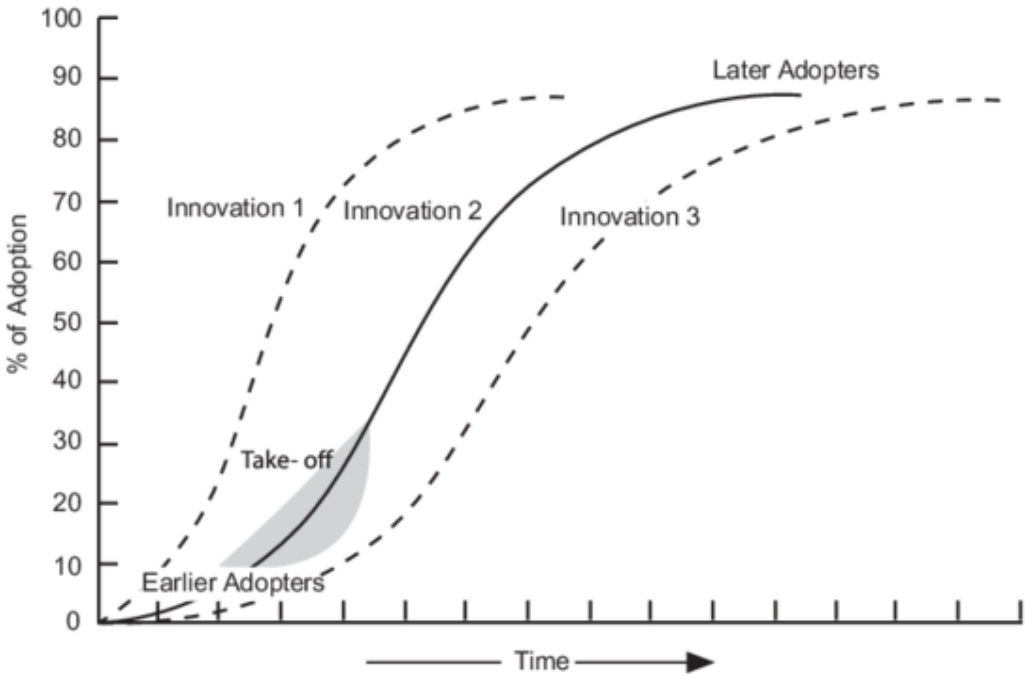


Figure 24 Rogers' Four Main Elements in the Diffusion of Innovations

Events became more problematic when the DSCM in 2014 disseminated the content of the reports to the wider store team and these responses were varied and sporadic in many operations. When I pressed the DSCM to provide a percentage of compliance within the operations contained in their groups, compliance varied from 20% to 80% across the UK.

The early implementation of telematics seemed to illustrate some of the barriers identified by Rogers to early implementation (such as loss of control, loss of face and concerns about competence in a new context). An unplanned event, in this case a crisis (a fatal RTA), became the initial trigger event for increased innovation adoption (Anderson *et al.,* 2018). Rogers perhaps offers fewer insights here than Pettigrew and Whipp, who emphasise the importance of the influence of context and contingency, especially in transformative change. However, Rogers can still help us understand how individual change, however prompted, is embedded and sustained. The event was unfortunate in the extreme but provided an opportunity to seize any momentum for change from a crisis to our advantage. The event changed the opinion and perception of the telematics from a negative to a positive from the drivers' perspective. This argument perhaps gains credibility in the light of a subsequent untoward incident in location Z, (Appendix 14), (see discussion of database).

4.4 The Database

Table 7 Chronology of Events – Database

Year	Month	Event
2010	March	Meeting with line manager to discuss the investigation into the database
	May	My initial concerns were proven to be valid, major discrepancies found in the database
	June	More discrepancies found in the database
2011		On-going quarterly review of the database
2012		Continued concerns with database accuracy
2013		Differences in payroll numbers to drivers listed on the database
2014		Continued concerns with database accuracy
2015		Interviewed managers regarding the use and development of the database
2016		No data input for the whole of Scotland for all of 2016
2017		Flaw in the colour coding of the database came to light when I investigated how the company dealt with a fatal accident

4.5 An Analysis of Some of the Data

It had been intended that the drivers' risk database would be developed into a dominant tool to be used by driver safety and compliance managers (Appendices 18 and 19). However, the lack of supervision, monitoring and auditing of the database made the information contained within it incomplete and the following analysis is mostly about opportunities that were not taken and lessons for the future that arose from this inaction.

In 2010 between July and December I conducted an initial investigation (Appendices 17 and 18) interrogating the database on a monthly basis to identify any misuse, incorrect data or lack of use.

This was a broad investigation initially embarked upon as a sense check to the database's functionality and usability by the wider team. The problems that I became aware of, also vocalised by the DSCM, could be seen to embody aspects of Rogers' ideas about innovation, communication, time and social system as well as Van de Ven's innovation journey. While we had, as with the telematics, established awareness of the innovation among potential adopters and aroused a level of interest, the trialling and implementation of the database proved much more problematic than even the telematics had been.

Throughout 2011 to 2012 I conducted an initial investigation examining the database on a quarterly basis, checking that training had taken place within the timeframes agreed with the unions. During the observations I unearthed that there were significant variations in use, both in terms of how managers investigated database information trends and themes, as well as the readiness to input accurate information on a regular basis, which is an obvious threat and concern to its suitability. In addition to the dubious use of the database, DSCM were sent various other company weekly reports that they were expected to act upon, something I will cover later in this chapter.

A good example of lack of engagement with the database is demonstrated by when I became aware in 2016 that virtually no information had been uploaded for the whole of Scotland. My enquiries further flagged up the fact there was no audit tool or data analysis carried out by the company at any stage during the practical use of the database. Further observations and practical conversations within the workplace with managers unearthed a wide range of approaches to using the database. This irregular approach to employing this tool was further heightened by vague guidance from the then management team in how to use and prioritise this activity over other forms of reporting. Each DCSM was left to their own devices concerning the control and standard of the data uploaded; this was of great concern to me.

Many managers explained in their defence that they had many data streams to work with, three of which caused a conflict of priorities: the driver risk database, ARB reports (Appendice 10 and11) that they received weekly and the new driver performance report (Appendix 12) that was derived from telematics data that also arrived weekly. The perceived lack of clarity regarding prioritisation and focus of time and resources created an on-going issue, or possibly excuse, where managers would constantly fall short of the goals set when the database was first constructed and implemented. The properties required to make innovation Rogers (1993) successful, notably its compatibility with existing systems, the complexity or ease of its use, and above all its trialability the extent to which the innovation could be tested by potential adopters without a major investment of time or resources were signally absent. It was clear to me at the time that there needed to be a coming together of

the various data streams available to the driver safety and compliance team. My own analysis of its functionality combined with the feedback from those using it demonstrated to me that this could not be achieved by simply tweaking the existing database. What was needed was a fundamental redesign and one that would involve end users in what Rogers (1993) calls, 'the mental evaluation of the innovation' as well as the trial. This major change would need careful explanation and mustering of evidence and so in 2015 I started to have conversations with my line manager about my observations and how to develop a more comprehensive system, which would become Database 2 (Appendices 20 and 21).

There was clear informal evidence that some managers were champions who diligently focused on both training and developing drivers in response to all three databases the driver risk database, ARB report and safer driving report. These individuals could form the nucleus of a potential future cohort of persuaders and early adopters. For example, two particular managers who worked in and around the M25 demonstrated to me in person in 2015-16 how they were able to effectively amalgamate tasks and successfully undertake ARB, post-accident training, upload all relevant new information onto the database and notify the system of personnel who had left. Also, they used the driver safety report proactively, training those drivers who had been identified by it as exhibiting poor driving behaviour. This manager spent time with drivers on the road and would then monitor their behaviour using the safer driving report over several months post-training. Finally, this manager would then evaluate any change in the driver's position within the database. More often than not this resulted in long-term behavioural change and improvement. Rogers argues that simply educating staff about a policy ('vision knowledge') is insufficient for the adoption of an innovation. Employees must recognise that the innovation is compatible with their job and that underpinning its vision there is a relative advantage over existing ideas.

Here at local level was also an excellent illustration of Van de Ven's 'life cycle' mode of change (see Chapter 3). An individual, in this case a highly motivated manager with a holistic view of driver safety process of regulation and compliant adaptation. However, as Van de Ven observes, this life cycle mode is probably more appropriate for prescribed small-scale innovations and may be less appropriate for more complex environments with multiple entities. This was the case in this scenario since the excellent local practice I observed did not cascade across the culture of the whole store where this particular manager was based. Moreover, my role at this time precluded me from sharing more widely and directly this and other examples of good practice. The learning produced from this source did not percolate outside its immediate context and the potential it had to educate other managers about how to manage competing priorities, develop a more compassionate culture of performance

management, and use data and evidence for evaluating the effectiveness of interventions, was not exploited.

It proved difficult for me to engage and maintain a sustained interest in driver safefty initiatives across all levels: operational, middle management and senior management. Attention from management occurred in peaks and troughs, often associated with crises or changes of senior management staff. Although the driver safety and compliance team provide a pivotal role in the acquisition, training and development of drivers, their feedback and input to operational managers within Tesco stores was often received within an alarmingly high level of disinterest. Equally, neither were compliance managers within operations supportive of the DSCM endeavours and I spent much time and energy during the case study seeking to understand the causes of this reluctance, articulating my ideas to my immediate line manager. I can understand to an extent resistance to processes perceived as being 'helicoptered in' from head office and the way in which my role could be seen as being 'the messenger' for top-down approaches. In the influencial *The Fifth Discipline* Senge (1990) distinguishes between commitment, enrolment and compliance in relation to change. In Senge's description, total commitment and willingness to change and adapt appears at one end, while total apathy is at the other. Enrolment and compliance (going along with a change because it is easier than resisting it) sit in the middle. As discussed above, a Rogerian approach assumes that success in diffusing an innovation depends on the co-presence of commitment and enrolment. Or in other words, what matters is ensuring that the critical mass of those behind the innovation outweighs the nay sayers. Clearly, compliance with health and safety is absolutely vital to saving lives and preventing injuries; my job is ensuring compliance with driver safety legislation and procedures. I came into post convinced that any culture of driver safety is about more than mere compliance, it is also about the individual driver feeling valued. I was therefore preoccupied with moving the workforce, or at least those champions I had identified, towards genuine compliance. Where this was not immediately possible the goal of formal compliance was at least an achievement. What was more of a challenge was experiencing grudging compliance, which might easily revert back to the kinds of sabotage that had undermined the database. On reflection, my then manager sat between formal and genuine compliance and further afield, the complexity of organisational structure and the various power relations within it made for overall poor compliance.

In August 2012 there was a fatal accident involving a Tesco Dot.com van and a pedestrian in West London, an event that refocused the company's approach to driver safety. Being in the centre of a police investigation and having widespread negative press coverage brought driver safety back onto the main agenda of the business. My previous argument

gained credibility and it began to be widely considered that the first driver database was inadequate as a stand-alone tool to protect drivers and the company. When I embarked on this project my main intention was to utilise information from the database to underpin what I imagined would be a much neater (and shorter) study of driver safety behaviour. I soon realised that I had to widen my investigation, as discussed above, while aligning myself with a fundamental theme of the project, that of driver safety. I soon recognised that any resulting analysis of key components within the database would provide misleading and corrupt results. This was clearly evident as early as 2015 and two examples from this period illustrate the way this would be the case. Firstly, as previously identified in this chapter, there was a distinct lack of data uploaded over the course of the year in Scotland, meaning that database analysis would be incomplete. Secondly, comparing the number of currently working drivers on the risk database with the company's HR payroll codes for drivers revealed a vast discrepancy. There were over 3,500 more drivers active on the risk database compared with those present on the payroll, also signifying that analysis would be irregular.

Tesco Dot.com employs a colour-coding system throughout its business with 'red' representing a fail, 'amber' a concern, 'green' good and 'blue' being excellent. This system was employed throughout the database to allow quick and efficient interrogation, enabling managers to easily locate failing drivers who were filtered in a high-to-low format. On first investigation, this methodology looked both practical and achievable. However, many drivers would focus entirely on this database, identifying themselves within its ranking system. The disadvantage of this is that they would then neglect both the ARB report and safer driving report and in doing so would replicate an unbalanced approach to minimising risk. When investigating the most recent fatal accident, it became clear to me that the driver safety and compliance management team responsible for the related store had unfortunately changed several times as a result of company restructuring. This prompted me to reflect whether these changes had led to a reduced capacity for oversight.

I discovered that in this store there had been an unrealistic focus purely on colour-coding and not on a more holistic, detailed picture of individual driver behaviour. Therefore there appeared to be systematic failing in training as well as performance. When I first analysed the information stored in the database relating to the individual involved in the fatal incident, the entire report came up blue, which on initial investigation strongly implied that all training had been undertaken. As a result, the company was in a good position to defend itself in court or if investigated by the Health and Safety Executive. I discovered, however, that this was not the case and the driver in question had eight untrained contextual speeding events and four untrained ARB incidents. The fact that these incidents had taken place over a

relatively long period, and at the time the algorithm controlling the database had a time default that automatically showed an event as trained “blue/green”, conspired that to the casual user it appeared that all training had been completed.

In further, closer investigation conducted in August 2017 resulting from another fatal accident, I found clear anomalies to the use and interpretation of the database. I discovered that the individual concerned had eight outstanding speeding offences. Although these events went back several years, the driver had not completed the associated training put in place to correct this behaviour. My concern was that as a result of no training taking place over several years the algorithm within the database had automatically turned these events blue, masking the need for any initial investigation. At the same time, I was able to discover trends and data relating to total numbers on the database between 2010 and 2017. The table below illustrates the number of drivers that have joined and left the company since 2010, as well as the volume of accidents and speeding events across the company. The data in Table 8 is designed to help the reader get a feel and taste for the numbers and types of incidents that the Tesco Dot.com van fleet encounters.

Table 8 Drivers, ARBs, Speeding Events and Facts from the Database

Drivers on the Database			
	Total Number of Drivers on Database	**Leavers**	**Total**
	15,675	25,658	41,333
ARBs			
	Total Number of ARBs from 2010 to 2017	**Trained ARBs**	**Untrained**
	13,376	10,517	2,859
Speeding			
	Events	**Trained**	Dismissal for more than 20 miles an hour over the posted speed limit
	10,042	3735	47
253 drivers have no information about them on the database tool			
The police have prosecuted 267 drivers for various driving offences			

Table 9 Drivers with Penalty Points on their Driving Licence

Points on Licence	Times
12	1
10	2
9	8
8	4
7	1
6	100
5	11
4	13
3	637

In 2016 there were 4,120 accidents over 120 million miles, resulting in an average accident rate of one every 29,126 miles.

Table 10 Total Number of Driving Incidents in the Database

Year	Number of Accidents
2010	1846
2011	2808
2012	3334
2013	2675
2014	2742
2015	3815
2016	4120

Table 11 Driver Age Profile

Age of Drivers	Female	Male	Total
18 - 21	64	627	691
22 - 30	387	3,079	3,466
31 - 40	329	7,079	7408
40+	267	3,935	4,202
Total			15,767

4.6 Driver Safety Reports (Telematics)

Throughout the 2010 - 2016 period of my project, my findings would be passed on via telephone conversation on a day by day or week by week basis to my line manager for him to decide what action should be taken, if any. Here I focus on the role of the safety reports in the final two years of the project, 2014 to 2016. Equally, discussion of report findings formed part of my regular and routine observations with managers and drivers in the workplace. I felt that this informal approach allowed me to get a clearer picture of both the functionality of managers and drivers alike (Basacik and Stevens, 2008). I also interrogated these reports over a significant period of time, focusing in detail on one site (location D). This has allowed me to maintain an overview and to monitor the general driver population along with the responses of driver safety and compliance managers.

The Microlise programme for collecting data from our vans and the drivers' behaviour started in 2008 in our (location X) operation, where I was the driver training manager at the time.

I have reviewed the progress and development of the data received from Microlise and have had in-depth discussions with drivers and management on the effect the data when displayed in report form has on the drivers and the management.

I initiated the use of in-van telematics as a result of an accident where it was discernible that our driver had been speeding and not concentrating on his driving, meaning that they collided with a parked car with no other third-party involvement. This incident highlighted the lack of focus that the company had on the safety of our outreach drivers and the general public. At this point, if a driver were to be involved in any serious incident, blameworthy or not, the Health and Safety Executive would be critical in the extreme regarding our lack of 'duty of care'. The company's culpability in the situation was compounded when I interviewed the driver; his statement strongly implied that equipment retrofitted by the company was a major contributing factor.

I was aware that there was no option other than to create a more inclusive safety culture that assisted in protecting the company, our drivers and the general public. One of the biggest complaints from our drivers was that they felt alone when out on the road, and after researching potential avenues to take, the company chose to activate the option of fitting telemetry gathering equipment to all of our vans. This would create a reporting process that would support both development and performance management of the drivers and improve our duty of care and allow drivers not to feel so alone. However, this change was subsequently shown not be quite so warmly welcomed by the drivers.

This form of collecting data from our vans and the drivers' behaviour started in 2008 in our X location operation, where I was the driver training manager at the time. We chose Nottingham-based Microlise as our telematics provider as they had had experience working with our partners in distribution. Under my supervision the system went live for 12 weeks, during which time the drivers were not informed of any of the data collected. After the 12-week consultation period, drivers were shown their own report during a private one-to-one session with me and my team with no disciplinary action involved. The results for some of the drivers, approximately 50%, caused a great deal of emotion amongst the drivers. This was the first time for most of the drivers that they had access to a report that actually displayed what their driver behaviour actually was like.

The majority of drivers (mostly those with a poor report) deemed the introduction of the telematics system as a spy in the cab. This negative response was to be expected, so to help circumvent a total driver rebellion we entered exhaustive negotiations prior to piloting with the trade unions involved to obtain their approval relating to the driver safety initiative. During the first few months, I witnessed many cases of sabotage, due mainly to the lack of understanding throughout the company of the advantages of telematics. The vandalism of vans resulted in tens of thousands of pounds of damage. As previously mentioned, this wave of negative emotion diminished greatly when telematics were used to support a driver's blamelessness when involved in a fatal accident involving a young female cyclist.

I was aware that there was no option other than to create a more inclusive safety culture that assisted in protecting the company, our drivers and the general public. In supporting the research into potential options, the option the company chose to utilise was to fit telemetry gathering equipment to all of our vans in order to create a reporting process that would support both development and performance management of the drivers and improve our Duty of Care.

This unfortunate incident demonstrated the positive aspects of this technology. For the first time, the company was able to liaise with the investigating police officers and furnish them with court admissible data that could either support our drivers' innocence or lead to a successful prosecution. Legal process involving a coroner's court would normally take a minimum of six months and a prosecution of death by dangerous driving can take anything up to four years. As stated previously, but important to reiterate, on this particular occasion as a result of the data provided by the company the police were able to inform us within forty-eight hours, unless new information became available other than that of the telematics and witness statements our driver would not be prosecuted.

Although this was of no solace or relief to the unfortunate family of the cyclist or our driver, it did prevent a protracted stressful build-up to a court case that would have caused additional stress for our driver with a negative impact on his health. The introduction of telematics and its subsequent benefit relating to road safety is one of our biggest achievements within Tesco Dot.com and is clearly traceable throughout the data capture of my case study.

4.7 Safer Driving Report

With the introduction of telematics, the company recognised the need to initiate acceptable limits of behaviour. To achieve this, we first introduced a red warning light to indicate excessive speed (20mph) over the posted limit. This would create a report to be opened at the beginning of each working day and drivers setting off the light would be suspended and probably dismissed.

On observing drivers during this period of change there was an initial spike in offences, which almost immediately dropped to a trickle. Very quickly it became apparent to me that the drivers would drive at speeds very close to the maximum limit without inducing a notification. This would be interpreted by the HSE as the company consenting to poor driving behaviour and breaking the law inadvertently Tesco Dot.com had adopted a binary process for dealing with poor driving. For example, if a driver went beyond a given threshold then a report would be generated, and appropriate action taken. This only affected the worst 3% of drivers and my concern was that we needed to administer all of our drivers to constantly raise the safety level of the entire driver population .The ideal use of the driver safety report would be that it would be printed and displayed in the Tesco Dot.com area of Tesco for drivers to see. Data would be presented anonymously by the use of payroll numbers rather than identifiable names so the drivers could gauge for themselves how the telematics had portrayed their behaviour and hopefully their pride in driving would incentivise them to improve without supervision or other ostensible interventions. This approach chimed well with existing processes of fostering a culture of target-driven improvement in customer satisfaction. However, in many stores the driver safety report would never be printed and displayed and would be used only by individual managers. I discovered this discrepancy in early 2015 when I investigated how the report was being used by various members of the team. Its potential as a tool for individual and team feedback, a celebration of success and continuous quality improvement was not consistently exploited.

I also discovered early on that the use of this report was also affected by technological constraints in the context that drivers identified via the use of the company's Serial Device Server (SDS) device (a handheld computer) in early 2016. If the SDS device is not correctly uploaded with the drivers' details, or there is difficulty downloading data at the end of the trip, the driver safety report run by the Microlise system will not recognise the driver. The data will be dumped in a collective pot and this again caused the DSCM concern as valuable data was either corrupted or lost.

I made a number of general observations in the workplace via line manager reports between 2010 and 2016. These reports enabled me over time to observe, mostly in the six big Customer Fullfilment Centres and the six DSCM, the likely relevance, strength and interplay of the five properties of an innovation likely to support or impede the innovation as identified by Rogers (1983): relative advantage, compatibility, complexity, trialability and observability. In order to analyse further the incomporation of the telematics innovation, I will break down Rogers' points in relation to this particular case study here.

Relative advantage, the degree to which a new innovation is perceived to be better than what currently exists. Here, as with the telematics, the potential advantage of the database was incompletely understood. There was the added disadvantage that the database in some instances provided data which was less than accurate or meaningful. One manager voiced a common concern:

> I am not sure what I should be doing, working from the risk element of the database, using the safer driving report (neither are wholly accurate) or just concentrate on my ARBs. Either way, the stores won't help performance manage the drivers, so what's the point?

Compatibility, the perceived 'fit' of the innovation with existing structures, processes and values. Managers in several instances had to struggle to prioritise the driver reports; however, others found that the innovations chimed with existing values and processes of audit, feedback and performance management.

Complexity, the degree of difficulty involved in learning about and implementing the innovation. The telematics data was relatively easy to interpret and generally reliable.

Trialability, the extent to which an innovation can be tried by potential adapters without a major investment of time or resources. As discussed above, once the hurdle of driver acceptance had been overcome it was found to be efficient in both cases.

Observability, the degree to which outcomes resulting from the adoption of an innovation are visible. This was paradoxically initially a barrier to adoption due to driver concerns about 'naming and shaming'. However, this turned out to be one of its major assets.

My observations overall suggested that the property having most impact was the innovation's complexity or ease of use. The more difficult to use, the less likely that the innovation will be taken up consistently.

4.8 Change as a Result of Observations

As a result of the implementation of telematics in our vans we were now able to develop our own bespoke report system, the Safer Driver Report (SDR). On the 10th August 2012, we went back to Microlise and designed a major step change to our driver profiling and created the (SDR).

It might be expected that the perception of the drivers was that telematics was just another management tool to beat the drivers with, indeed this was the case, however unintended when contemplating its conception.

There was a need for a sliding scale to be introduced covering the fundamentals of driving practices that would allow both management and driver alike to have visibility and be able to compare performance on an individual, store, regional and national level, expressing standards and variations across the board. To do so, New Key Performance Indicators (KPI) were introduced grading each element of the driver's behaviour. This driving output was ranked A to G and colour-coded like a washing machine display to show its power usage. The banded grading was set so that 'A' is green, moving to red if showing at 'G'. The Safer Driving report was a big step change towards making and sharing driver data with our drivers expressed in a way that was easily understood by all.

It has been noticeable throughout my analysis of the safer driver report that the vast majority of drivers are extremely competitive and once data is published anonymously amongst the drivers, usually on the wall in the driver delivery area, there is a marked improvement in performance. Even in the drivers most resistant to training who had entrenched poor habits and behaviours, there was an upturn in performance in relation to risk that could be positively tracked for many months.

I am particularly interested in this effect as it supports the investment of practical driver training compared with online driver improvement packages readily available on the open market. This may be as a result of a virtual parental effect based on the premise that the driver training manager or their successor effectively gave the opportunity of

employment to the driver at the onset of their career. Having a face-to-face conversation with the person who effectively welcomes you into the company creates a marked change in behaviour, which can also be tracked via the Accident Review Board process.

4.9 Accident Review Board

I launched the Accident Review Board (ARB) in 2008 in location X to help support our drivers and gain a better understanding of accidents and incidents. More importantly, the board was initiated to make managers aware of their responsibilities in supporting our staff in relation to the expectations of the Health and Safety Executive. On reviewing the company's approach to accidents and incidents on the road, I became aware that there was a high level of deniability relating to disciplinary action resulting from poor driving behaviour. In other words, it was arbitrarily accepted. In my eyes, we were rapidly moving to the worst-case scenario of accepting fatalities as an operational by-product, a totally unacceptable situation in a blue-chip company such as Tesco (Appendix 12).

4.9.1 How it Works

This is a simple and impartial method that takes place via a conference call in order to determine whether an incident or accident was preventable. If deemed preventable then the resulting training and performance management would be discussed. The ARB process provided another excellent opportunity to gain insight and foresight into the drivers' accidents and incidents. For example, it is quite alarming when engaging in conversation with drivers to be given the insight that minor accidents and in some cases some serious accidents are considered an occupational hazard.

The opportunity to share data with drivers both on a personal level and national level has gained great benefits relating to the reduction in the volume of incidents and accidents that can now be traced to our insurance company Sopp and Sopp, showing a 50% saving on accident damage over a ten year period. The most beneficial insight I gained via my data collection relating to the ARB process was not the fact that a driver's approach to risk and danger was an insurmountable fact, as it can be tracked and traced to improve standards (Baecke and Bocca, 2017). Throughout my research more information relating to accidents and damage costs has been provided directly to the drivers. It was the lack of conviction of the management team to support the driver training compliance team in the field of performance management. If a driver is deemed to be at fault as the result of a preventable accident or incident, then training will always be provided as a solution up to a limit agreed with the trade unions. Once this limit has been reached then it is no longer acceptable to sustain such a high-risk driver within the business. To mirror this process there needs to

be a level of performance management, which will build over a period of time and also could ultimately result in dismissal.

In talking to and working with the drivers, they fully understand the concept of the need for development training and performance management and are bewildered with the performance management aspects of the ARB process receiving little energy from the management team. This is not a localised problem, this is a national issue leading to some drivers on the database having been involved in up to 15 or sometimes more accidents, having received development training after each event and yet are still working within our company as a driver. And this is not only isolated to the ARB process but can also been seen to leach into contextual speeding.

4.9.2 Contextual Speeding Reports

With the installation of telematics for the first time, I was able to gain an invaluable insight into the behaviour of our drivers. During a period of growth since 2005 there was a significant rise in the volume and severity of the accidents involving our delivery vans. I was aware that, unchecked, the proliferation of speeding that had developed would grow exponentially. As a result, the company consulted with the Association of Chief Police Officers (ACPO) and used their guidelines regarding speeding to form our policy regarding the disciplinary and behavioural outcomes as a result of speeding.

We opted for a pulse system that interrogates the van for a telematics upload every five minutes or every mile, whichever comes first. The objective was to capture behaviour and not isolated events, although extreme events would be automatically captured and acted on immediately. When a speeding event takes place the telematics system will upload a grid reference. This will reach the training managers in the form of a weekly report. They are able to copy the reference into Google maps to see street level in order to print off an exact location and view of where each event took place. We are then able to challenge the behaviour of the CDA with regard to time of day, day of the week and location to make them aware of their actions and the possible outcome of that event.

It is our experience that when a CDA is confronted with hard data regarding their behaviour and the possible outcomes clearly explored, then there are few re-offenders. This project has been a hugely positive step in the continuing reduction of Occupational Road Risk. When we first installed the system across the whole van fleet in 2011, we were in for a surprise: it was registering some 25,000 speeding events per month with a driver population of approximately 7,500 at the time. Many were drivers moving at 32mph in a 30mph zone.

In working with the drivers, it was important to convey the relevance of the work contextually. I am aware that politically in many circles adhered to by most driver trainers and training organisations, speeding is speeding; however, to get the collective buy-in, utilising the ratios provided to us by the police, we endeavoured to work with the drivers in adopting a more pragmatic approach. We wanted the drivers to question their own driving and that of others, considering how they would view an event if it had taken place outside their own home or in their community. In this context we asked, 'how would you see this through your eyes as an experienced driver?'

An example that was used in relation to our drivers was: the telematics system picks up a van accelerating from 30 to 37 mph in the process of leaving a village, progressing into a national speed limit section of road (50 mph) for a van at 9:45 on a winter's evening, dry road surface clear visibility. Compare this with a van leaving the national speed limit, entering into a village failing to reduce speed adequately at 8:45am on a school day morning, wet road surface outside of a school.

In working with the drivers, they clearly showed an understanding of the difference between the two behaviours relating to the overall risk of the event. Because this approach was taken as a result of data analysis and consultation with drivers in a workshop environment, the company has yet to receive a single grievance relating to a positive contextual speeding event as the jurisdiction over the outcome of each event was driver-orientated. So effectively, in real terms by trying to approach this in a real-world outlook, although many may question this process it has led to a dramatic drop in overall speeding offences by up to 90%; this has been a major sea change in the improvement of overall driver safety, which is mirrored by a paralleled 90% drop in notices of intent to prosecution generated from both handheld and static speed cameras.

4.9.3 Tracking Improvements

One of the benefits provided by the safer driving report is that I am able to identify poor performing drivers and arrange for development training, monitoring any improvements. Recently I conducted a pilot to ascertain any benefits that could arise from the most basic of driver development, in other words general hints and tips rather than a comprehensive advanced driving course. This was conducted in our location Y CFC and showed an immediate intervention at a low level was almost as effective as a full on-the-road training session.

The results were very positive; out of 24 drivers 45.5% showed significant improvement.45.5% stayed the same or showed marginal improvement and 9% dipped in their performance. What was most interesting is the fact that those that improved the most continued demonstrating a sustained improvement. For example, in recent months I have been able to track the performance of drivers who have received training as a 'G' grade driver, raising them to a 'C' grade driver, a level that they have maintained.

As the training managers began to work with the CDAs these results dropped again to approximately 3,000 recorded poor driving events. We are currently running at approximately 170 events per week; however, our van fleet has grown to over 5,500 with 17,000 drivers. When you express the improvement as a ratio, back in 2011 we were triggering one speeding event per driver per week. Today this has improved to a figure of one speeding event per day for every 100 drivers on the road a phenomenal improvement.

The roads covered are:

- Motorways
- The main road (Dual carriageways A – Roads)
- Other A roads
- Local and rural B roads

Unfortunately, residential roads are not covered.

When an incident was triggered to then be entered into the report, the report was able to give me the detailed data to work in conjunction with Google maps to provide the driver with map and pictorial evidence with their position overlaid on it to provide an indisputable evidential profile of the driver and the event.

Details of incidents are sent to our Dotcom support in India, where information from drivers, our insurers and maintenance suppliers is collated, and a report is formed that is disseminated throughout the DSC teams. There is a 30-day completion threshold attached to each training event to help support a punctual completion of this development.

4.9.4 Sopp and Sopp Insurance Reports

Each time that there is an incident, the company that deals directly with individuals who have been involved (Sopp & Sopp) in an incident involving a Tesco Dot.com vehicle generates a report covering many aspects beyond third-party motor incidents. I receive this report via my line manager.

The Sopp and Sopp insurance reports are invaluable, as they give a clear insight into what type of damage has taken place and the various circumstances that our drivers are involved in.

This information distilled down to the three major component groups shows clear themes that help me to develop more efficient development in training. Last year's data (2017), for example, shows me where my attention needs to focus as over 60% of incidents involve a stationary vehicle. The data from this report enables me to recognise common themes in driving behaviour and allows me to give the best advice to my line manager as to the most appropriate changes to make.

I am able to track Notice of Intent to Prosecute (NIP), these are where the police have requested and given 28 days' notice for the company to provide them with the details of the driver. I am able to compare different regions in terms of the level of impact and the reason that the misdemeanour taken place. If the police do not receive an appropriate reply within 28 days, the company will be fined. NIP reports tell me:

- Week
- Store name
- Driver name
- PCN number
- Van registration
- Date of the offence
- Time of offence
- Location of offence
- Offence description
- Request sent to store
- Reply received from the store
- Driver's name
- Employee number
- Driving licence number
- Date of birth
- Address
- Response week number

The current agreement with the trade unions is that the company will pay any fines. There is a feeling within the company that although this stance supports our drivers, it can also lead to supporting poor behaviour. This is an area that will need to be revisited in the near future.

The capture of this data relating to committing traffic offences provides me with a view to how some of our drivers perceive risk and the potential to be prosecuted for work. It also shows me which councils have invested heavily in speed cameras and speed enforcement. The current agreement with the trade's union is that the company will pay any fines. There is a feeling within the company that although this stance supports our drivers, it can also lead to supporting poor behaviour. This is an area that will need to be revisited in the near future. In 2016 Tesco Dot.com spent approximately £64 million pounds on fuel and I am now able to filter raw data from the Microlise reports and create an ascending report that clearly shows the differing driving styles of the drivers. The report is taken from a four-week period so provides a fair depiction of roads and distances covered by the drivers. Even with the distances taken into account, the variation in fuel efficiency of our drivers can be vast, some able to drive twice as fuel efficiently as others. If each driver improved their mpg by one, then this would result in a saving £1.5 million pounds per year.

4.9.5 Fleet Reports

In the course of working on my project l have discovered that there are several high-level reports that show the following data:

- Vehicle Utilisation Summary Report
- Fuel and Emissions Report
- Vehicle KPI Report
- Detailed Performance Report

These reports are extremely useful for helping to frame a business proposal of national strategy relating to training and development. The fleet reports are an effective method of expressing van data to show the effective use of individual vans within a fleet and of the fleet as a whole.

4.9.6 Fuel Usage

I have access to the reports that are also generated via our Microlise partners who give weekly detailed reports on:

- Overall summary
- Miles per Order
- Miles per Gallon
- Litres per Order
- Litres per Week per Vehicle

I have full visibility of the varied areas of Tesco Dot.com:

- Click and Collect
- Enfield Gas vans
- Top – Bottom stores
- Average Mileage by vans
- Same Day Delivery

The report is extremely informative when comparing like-for-like van and delivery territories. Having a large van fleet covering 99% of the population within the UK, the variation between very similar geographic areas using the same model of the van can be quite fascinating.

4.10 What Does the Report Show?

For each offence, the report will show the Customer Delivery Assistant's name, the date and time of the offence, the Vehicle Registration Number, the recorded speed of the vehicle, the location of the offence and the posted speed limit.

4.10.1 Procedure

1) Every five minutes, and every mile, the safer driving equipment cross-references the legal road speed of a van's current location with its current speed.

2) A speeding event will be triggered if a van is driven above the legal limit by 10% plus two miles per hour. For example, 35 miles per hour in 30 miles per hour posted area.

3) The information on each report is validated to ensure the details are correct (completed by CDA trainer).

4) Once this has been established the information will be sent to stores in the weekly Driving Behaviour Report via the work plan.

5) Any events shown on the Contextual Speeding Summary are investigated as per the existing performance management process (completed by Tesco Dot.com Manager).

4.10.2 Data Capture Issues

I am able to interrogate the Microlise reports on my laptop to capture information on individual drivers over any given period. The report is invaluable in visualising who are the better drivers regarding their driving behaviour and those that display poorer behaviour. However, during this project, it has become clear to me that there is a fundamental flaw in how we capture data from various streams and amalgamate them into one coherent format.

The data collated to produce a driver specific report is reliant on our two main data streams merging flawlessly, one from our Telematics supplier Microlise, capturing data from the vans CAN Bus.

(The Controller Area Network (CAN, also known as CAN Bus) is a vehicle bus standard designed to allow electronic control units and devices to communicate with each other in applications without a host computer. As an alternative to conventional multi-wire looms CAN Bus allows various electronic components (such as electronic control units, microcontrollers, devices, sensors, actuators and other electronic components throughout the vehicle) to communicate on a single or dual-wire network data bus up to 1 Mb/s).

This data has to be married up to the Tesco Dot.com REACH/SDS device where the retail data is captured, stating:

- Time of delivery
- Customer's signature
- Final products delivered
- Any refunds

The fact of the matter is, that if a driver does not take a REACH device on their trip and purely relies on paper to capture data, such as the customer's signature, or if any data is lost in the download at the end of the trip, I am left with no telematics information relating to that trip.

4.11 The Database

The company was keen to oversee the behaviour of the drivers as well as the exposure of Tesco Dot.com to prosecution for not having its drivers trained correctly and an accurate record maintained. The company commissioned the installation of a database in 2010 as a response to the ever-growing driver workforce (then approximately 10,000 drivers). Now

this figure has grown to 17,000 drivers, this decision is another example of the on-going step changes in our use of telematics data. Tesco Dot.com was aware that there was a need to centrally store data concerning the drivers' training and performance.

At the time the only records available were paper training record cards held in each individual operation. Yet it is imperative that accurate information is available to confirm training and provide evidence if required in a court of law. In 2012, I embarked on a review of the database's effectiveness and its impact on the business in the form of a case study. My initial concerns were that the database was not being utilised appropriately. In addition, there was no coherent connection between the database and other reporting mechanisms already existing within the business.

I employed questionnaires (Appendix 4), and structured interviews as well as quantitative data collection to investigate the database and my initial intention was to form and shape the major part of the case study around the database. However, the conclusion of my research was that the database in its present form was not fit for purpose and that significant amendments would be required to facilitate a structured resolution of its inherent deficiencies. As a result of my review, extensive modifications and additions have been made to existing processes and data streams, but substantial development or total replacement of the database is still required. The development of a new database is now in progress.

Having now examined the data streams uploaded onto the database and undertaken a wide-ranging review of internal company reports, training material and support programmes, it is clear to me that major and decisive changes are required if Tesco Dot.com wishes to identify high-risk drivers and action intervention training. The new database would provide a comprehensive risk framework to support this activity.

It was interesting to observe that the results from the database formed a key part of some DSCM work, yet it formed very little or no part of their work in other cases. In our desire to track every aspect of a driver's world with reports and grades, a data overload was being inflicted on the DSCM team that resulted in either overworking or an abstinence from work. Some DSCMs responded saying, 'what aspects do you want me to undertake and in what order, I can't do it all.'. Unfortunately, this meant that large amounts of work were not being attended to.

My findings relating to the database are of great interest to me as it epitomises the dilemmas and complications that arise when a working framework becomes over complicated and lacks accountability. Having continued to investigate the database

remotely, I have discovered several key flaws in its operation and implementation. A key weakness is the fact that the majority of the data uploaded is done so by the DSCM. Its effectiveness is entirely dependent on the DSCM data being correct and up to date.

A driver was recently involved in a fatal accident; on first inspection they had a “Blue” exemplary record on the database. As I investigated the data, the time algorithm alone had resulted in the driver's record being blue; he had in fact 12 outstanding untrained events all resulting from speeding and accidents.

What was most worrying was the fact that if an event was left long enough the database considered it too old to be relevant so effectively overlooked it. This fact would not look good in a court of law.

4.12 Findings from Interviews with Managers

In 2015 over a period of four weeks, I interviewed seven managers in Tesco Dot.com using a series of semi-structured questions (see Appendix 1). I am fortunate that I have had a virtually un-challenged opportunity to interview any person who is relevant to my project. Managers were selected to cover each of the seven main regions of England and Scotland, but resource constraints did not permit me to include managers in Wales and Northern Ireland. The purpose of the interviews was to establish what the Driver Safety Compliance Managers thought of the database and any recommendations they may have to improve it. Additionally, I wanted to see how company vision and goals regarding driver safety were applied at local or regional level.

All interviewees were assured of complete confidentiality and anonymity. Interviews lasted between 20 and 30 minutes and took place in private, in an informal environment within the interviewees’ workplace. I recorded the interviews on a digital recorder and transcribed them myself. While I approached the data collection and analysis with as high a degree of objectivity as I could, I am aware that responses to some of my questions may well have been influenced by people’s relationships to me as colleague, instructor, trainer and coach. At the same time, I was able to gain the confidence of colleagues in ways that might have been more challenging for an external researcher. Choosing the four main elements and data sources that I did enabled me to weave together themes and general observations, enabling me to structure my findings and recommendations to the company that I am confident are beneficial, scalable and sustainable.

The combination of Telematics data, data from our driver database, data harvested from my interviews and the questionnaires completed by some of our drivers provided me with clarity and insight into the functionality of the business, enabling me to not lose focus or

clarity when conducting my investigation, also providing a balance of both quantitative and qualitative data streams giving my case study balance and depth.

The purpose of the interviews was to gain an insight into how the DSR is used to drive the safety database and the drivers' opinion of it, in addition to gauging how they felt about the job role as a whole and any improvements or changes that may need to be made.

I wanted to use a structured interview strategy compared with that of an un-structured, to allow me to compare the results more readily. I wanted to avoid changing the environment, but colleagues felt intimidated or threatened so the theme was based purely on the job role. Once these interviews were carried out, transcripts were analysed thematically (see Chapter 3 Methodology). Themes were then compared with Rogers' properties found in innovations that are likely to meet with success, as previously described in this chapter. I was particularly interested in discovering the extent to which, largely unprompted, interviewees might describe some of these properties. Armed with this knowledge, I presumed I would be better able to optimise the innovation process to maximise its chances of success. My expectation was to be able to provide my line manager with a collective view of both positives and negatives from a cross-section of managers to help develop the operation as a whole. I transcribed 11 DSCM interviews, which asked the following questions:

- How long have you worked for Tesco Dot.com and what is your history so far?
- How often do you use the database?
- What are the strengths of the database?
- How does the database help you in your job?
- What areas of the database would you change, and why?
- What would you change regarding what could come of the database to improve it and why?
- If you were in charge of the driver training team what would you change in relation to the database?
- What is the recruitment and training process for CDAs from your perspective?
- What would you change regarding the ARB process and how would this be beneficial to the database, and so ultimately yourself?
- Should some assessors be ADIs?
- How should the buddy system affect the database, at present and in the future if training were to be over two weeks?
- What is the main weakness in the database?
- Do you think the validation process is relevant today?

I was aware that there would be a limit to the answers I was going to receive due to my position, so I used my judgement to structure questions that would facilitate an honest answer without negativity becoming the overarching tone of the discourse. I was fortunate that the managers were open to my questioning and seemed to be responding frankly, as on comparison there were many similar themes running through the emotion and direction of their answers. With more time and resources, I could have conducted follow-up surveys or repeat interviews to see how events and perceptions had changed over time. The time spent interviewing some of the DSCMs was extremely insightful. They voiced concerns that resonated with mine and, more interestingly, with many of the drivers. A compelling theme that arose from my case study was a common concern over the accuracy and cross-referencing of our telematics data. This by default spread uncertainty about the validity of many other company reports linked to this data. The results of the interviews are explained and demonstrated in full in the following 'findings' chapter.

I have created a word map constructed from the replies I harvested from the interviews. Although the interviews were quite short the data collected has proven to be very insightful.

Figure 25 Word picture generated from Interviewees' responses

The time the interviewees had spent working within Dotcom ranged from 8 to 24 years with a collective experience between the seven equating to 100 years. I wanted to gain generic themes and concerns rather than specifics about a particular region from the interviewees.

The geographic areas covered by the managers were:

- North-east
- North London
- South London
- Kent
- Scotland
- Central England
- Norfolk

In talking to the managers, most of my questions were open as it was my intention to gain generic themes and concerns rather than specifics that would affect their region but not others.

A number of Rogerian properties emerged in the analysis of the data, for instance, complexity or ease of use and trialability.

Most interviewees reported using the database sporadically, either several times in one week or none in others. One manager expressed this as follows:

“For me, it needs to become more of a live device, so the information is fed centrally, whether it be accidents, speeding or whatever it needs. So, all of its inputs should be living and be fed into the database as live data. This would make the database more of a live tool, so it would show me immediately who the risk was. I would like all that we do to be instantly up-loaded by tablet onto the database. I would like the safer driving report added. This would predict risk as at the moment all we are doing is acting retrospectively”.

This neatly encapsulates one of the main Rogerian requirements for successful innovation ease of use and also highlights the importance of trialability or the extent to which the innovation can be tried by potential adopters without major investment of time and resource. The manager in this instance wanted a ‘live’ tool, which could turn around inputted data in real time to aid decision-making. Conversely, other Rogerian properties were relatively absent and possibly predicted lack of success. For instance, the relative advantage of the database over existing manual procedures was not strong enough given that decisions still lagged too far behind data. Indeed, relying on the database could provide a false sense of security, as discussed earlier. Here, in miniature, was a clear example of the common pitfall of not involving the end user in the design of an innovation, and it betokened some of the problems lying ahead. When I asked the same manager a question relating to what they

would change in the database, the answer was as follows, again highlighting the value of trialability:

“To me I want it to be live and real, it’s just like a big diary at the moment. It’s hard to navigate, and there is a lot of repetition. I think assessors should have access to it and I should be able to see what they have input to verify that the information is correct”.

All interviewees expressed the concern that the database was technically difficult to use, not ‘policed’ and said that its functionality was difficult to merge with existing reporting systems. Hence its degree of compatibility with existing structures, procedures and values another Rogerian property was low. They all expressed grave reservations relating to the database being totally under the control of the training manager without any independent auditing or analysis, illustrating to my mind a concern over the Rogerian property of observability, or the degree to which outcomes resulting from innovation are visible to others.

What I found interesting was that each one of the managers expressed the common desire to have all the main reporting tools merged into a new style database that would effectively give live information. This still would not negate the need for training managers to upload data, so there was a common understanding of the need for some external auditing to take place, whether this was from the manager responsible for all DSCMs or a colleague tasked with regular monthly audits. What was pleasing is the fact that the interviews supported my initial findings that the database needed to be replaced with a more user-friendly tool that included all of the main data feeds that DSCMs work with. From the interviews the conclusion can be drawn that the new database needs to have more, comprehensive data, but expressed in a simpler up-loaded feed. It will need to be more closely monitored and its output audited for compliance amongst the DSCMs. Fundamentally, the workload created from the database needs to be achievable and for action to be taken if that target is not achieved by the DSCMs.

There was a collective reticence to go into details at a granular level. Culturally this was deemed being too critical, hence destructive within the business. This, in fact, was one of the main underlying themes that were expressed to me, and most managers were reluctant to be seen to be too critical, as they themselves could be open to criticism.

An opportunity for significant change at DSC occurred when in 2016 (chart 5.1) 15 members of the DSC team were made redundant.

This change of personnel drew attention to the part played by rank and structure. Put another way, using the CCP model (Pettigrew and Whipp, 1991), the predominant way of managing change within Tesco Dot.com had been largely structure- and content-driven.

Much less attention was paid to process. Interviews showed that there was a high level of firefighting going on where interventions by the DSCM were ignored by the store management team resulting in operational failure. This failure was compounded by the cultural divide between stores and Tesco Dot.com, the balance of power always lying with stores.

Other key concerns voiced during the interviews were the lack of clarity and honesty in the use and application of our driver risk database. It was communicated to me that the system was difficult to upload and use. A driver could not be entered into the system until they were in possession of an employee number. As the DSCM team were responsible for large groups and up to a thousand drivers, the communication to them from stores regarding employee numbers could be haphazard. Although there were many entries to be made relating to each driver the collation of data and the time taken to upload data became constrictive or a reason for not undertaking the task with the energy that would be expected.

Yet from the concerns that were expressed, it came as no surprise to me that a high level of anxiety was expressed relating to the lack of structure in interviewees' work and little consensus about how best to go about achieving the best results. As part of this change, managers had moved from being part of a big team where both praise and criticism were shouldered collectively to one that emphasised individual managerial accountability. Given that responsibilities have also increased, and managers were now in charge of larger groups of staff, so too had their anxieties. One manager said: 'My group is too big now after the structure change, there's no way I can get everything done. The new database had better work!'.

4.13 Drivers' Questionnaires

I had an opportunity in 2014 to carry out a questionnaire at our location X operation, which employed approximately 450 drivers at the time. I was able to get 122 of these drivers to complete a survey questionnaire while they were attending a pre-planned company workshop being run by the DSCM team. This questionnaire was the first opportunity that I was aware of where the input of drivers regarding their thoughts and expectations relating to driving was being captured. My expectation was that drivers would respond well to a questionnaire if it was clearly explained to them what the purpose of the exercise was, that it was confidential and not leading or condescending in any way. If the questions were too academic in structure or sounding that they may result in blame, then responses would be very poor.

The responses were illuminating as they conveyed the true thoughts and experiences of the drivers, an exercise that I believe should be repeated on a larger scale. Some of my research tools were designed more with a view to immediate utility and the task at hand, rather than producing generalizable validity. For example, my survey questionnaire could have asked more nuanced questions, such as being more precise about speeding. It was important to me that I gained a genuine insight into the understanding and expectations the drivers held regarding their job role and the business as a whole. It was a rare opportunity to harvest information from a large number of drivers about purely driver related issues. The emphasis is normally customer service related when gathering data from drivers and this shift in focus felt important. In fact, to date as far as I am aware, this has been the only questionnaire that has been driver specific.

4.13.1 Survey Questionnaire

Questionnaires

My questionnaires (Appendix 2) were structured on a five-level scale ranging from 'strongly agree' through to 'strongly disagree'. In addition, there was a mixture of open and closed questions to facilitate more honest answers. There was a mixture of yes/no answers with the facility to capture longer handwritten answers if required, as I was keen to capture fact and opinion. The questionnaires (Appendix 3) were conducted over a short period of time for both drivers and managers; this was a one-off snapshot in the form of a cross-sectional survey. Questions solicited data on:

- Gender
- Age group
- How many years have you been a driver?
- How many years have you been driving?
- How many accidents have you had while working for Tesco Dot.com?
- Do you wear a seatbelt?
- Do you ever break the speed limit, if so by how much?
- Has your driving changed since you started driving for Tesco Dot.com?
- Has your driving improved since driving for Tesco Dot.com?
- Has your driving got worse since driving for Tesco Dot.com?
- If you have ARB Training, has it improved your driving?

- Does Tesco Dot.com give you enough training and support to help you become a better driver?
- Would you say that you take risks when driving a Tesco Dot.com van?
- Does the safer driving report help you to improve your driving?
- Do you think tracking driver behaviour helps improve road safety?
- How concerned are you that you could be injured whilst driving a Tesco Dot.com Van?
- Do you enjoy your job?

I will fully discuss the results of the questionnaire in the next section; however, it is worth mentioning here the enthusiasm with which the drivers answered these questions. While I am aware of the potential 'halo' effect resulting from this survey being at the end of a training programme I had been involved in, the level of trust built up during this activity probably predisposed the drivers to offer more honest and open responses. I feel confident that I would not have had this volume of respondents if I had administered a postal or email questionnaire (Appendix 2).

Out of my sample driver population of 122 people, 119 were men (97.5%), and 3 were women (Appendix 5). This imbalance of gender is common in our large operations but less so in the other 335 operations throughout the UK. This was an issue I was aware of but was still surprised at the extent of the imbalance. The average length of time for each driver working at location X for Tesco Dot.com was three years and at that point in time the operation had been open for nine years. The overall driver turnover was running at 40% at the time, a massive negative cost to the company.

Question 1

Do you ever break the speed limit, if so by how much?

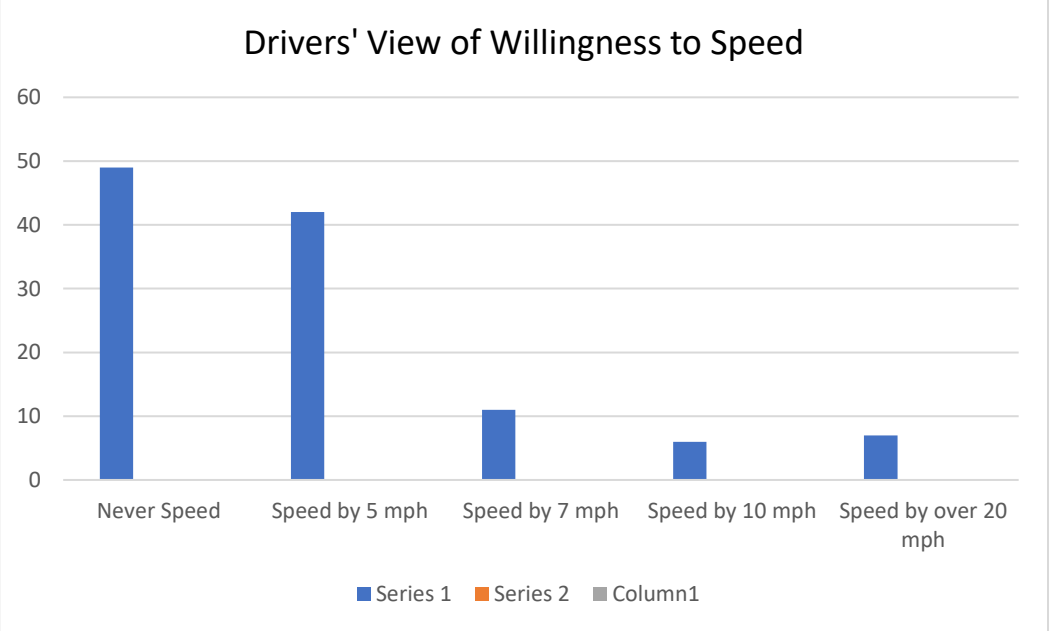


Figure 26 Result from my Questionnaire Regarding Drivers' Willingness to Speed

What was a concern to me was the apparent willingness of drivers to take risks while driving; 54% were willing to speed on a regular basis. Of even greater concern was that seven drivers were comfortable at driving at 20mph or more over the limit during their deliveries. If brought before the courts, this level of speeding is rated as an automatic ban. Speeding has been a major worry within Tesco Dot.com and the wider industry as a whole and will be covered further later in this chapter (see: Contextual Speeding).

Question 2

Has your driving improved since driving for Tesco Dot.com?

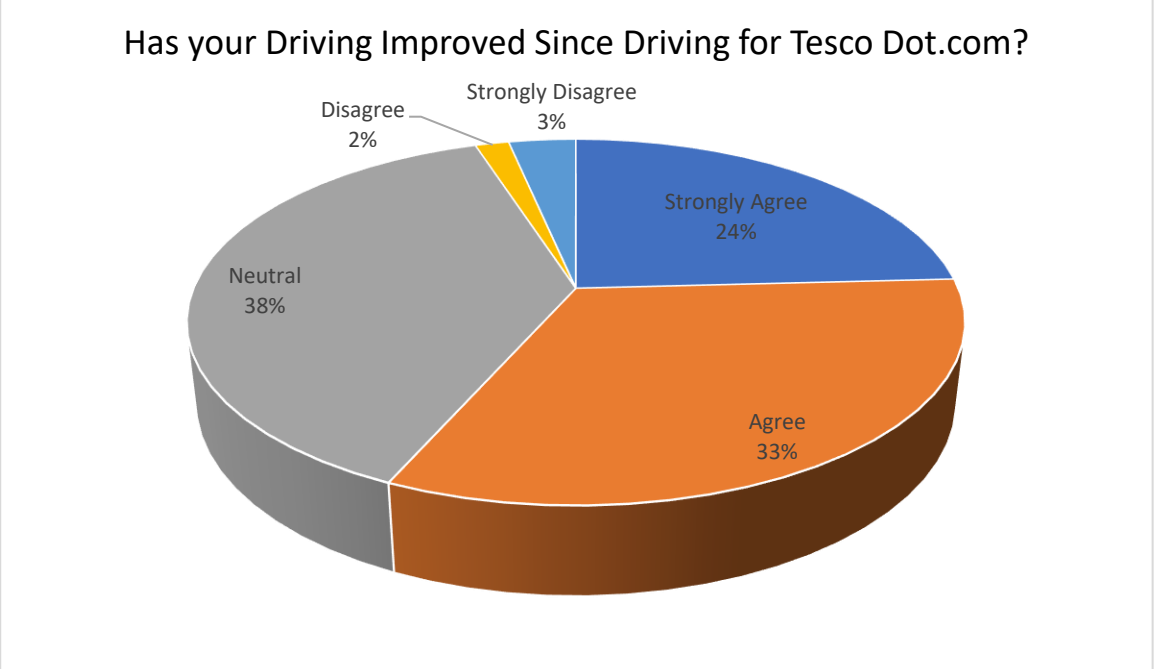


Figure 27 Graph Depicting the number of Drivers who feel that their driving has improved while working for Tesco Dot.com

There was an overall positive response to this second question with most drivers (55.73%) feeling that they had improved their driving since joining Tesco Dot.com, while 37.7% stayed neutral and 4.9% expressed that their driving had got worse. While responses were, of course, subjective and could be mistaken, the variation in responses was in itself an argument for increased driver improvement initiatives and further investigation into what we were doing that was effective. Had a substantial number of drivers considered their driving to be getting worse, this would have suggested major dysfunction.

Question 3

Has your driving got worse since driving for Tesco Dot.com?

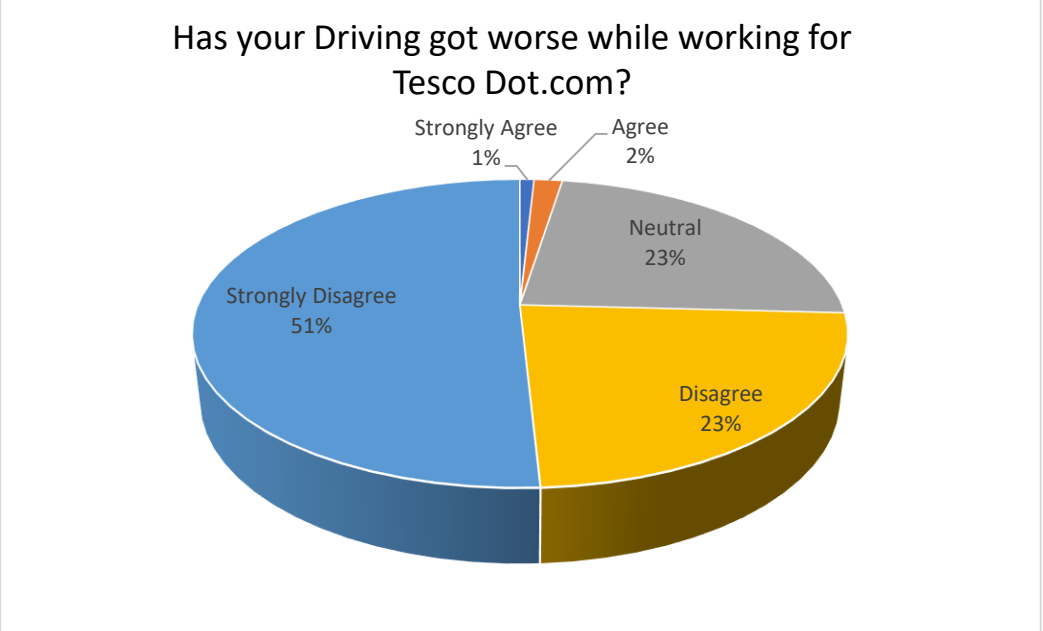


Figure 28 Graph depicting Drivers' opinion relating to their driving getting worse while working for Tesco Dot.com

What was interesting to discover was that the vast majority of drivers felt that their driving had not got worse while driving for Tesco Dot.com, and this finding corroborates the responses to the previous question. While it is important not to attribute causality to this kind of subjective response, the data suggested that there could be an association between the structure and development of the driver's workload and driver improvement processes that have been implemented over recent years and improved driver safety. A very low proportion of the drivers, 3%, expressed a negative view relating to the standard of their driving. It is worth noting that in my experience the driving population from this area of South London could be described as inhospitable to driver safety initiatives, so to receive such positive feedback was a genuine surprise to me.

Question 4

If you have Accident Review Board training, has it improved your driving?

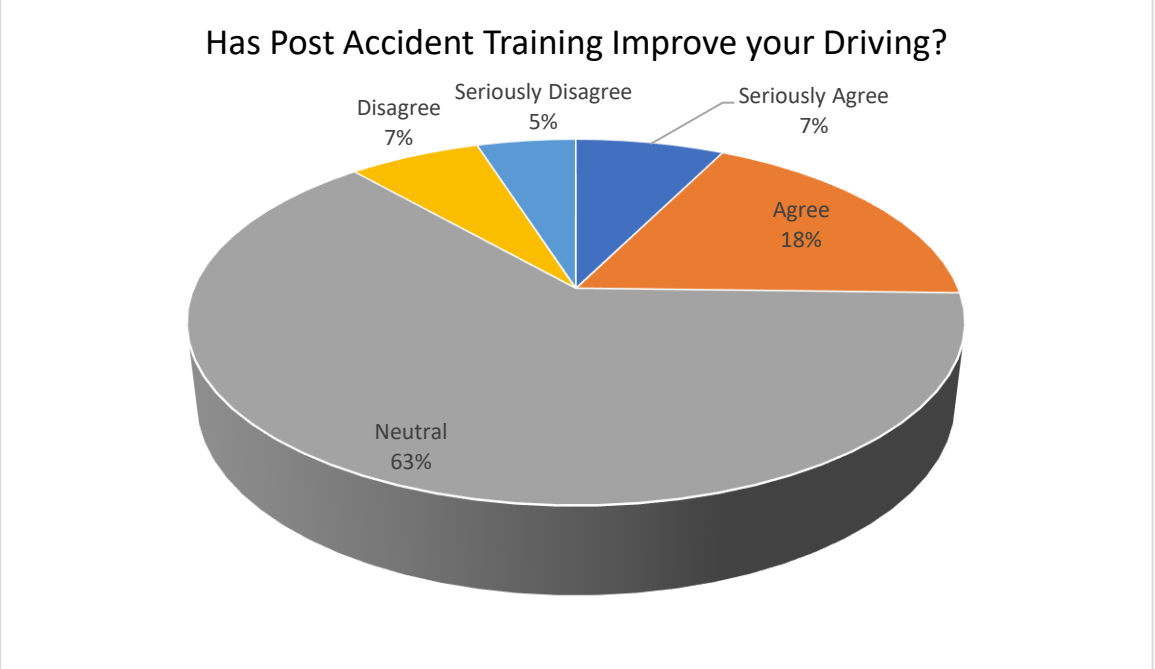


Figure 29 Shows the opinion of Drivers who have received post-accident training

This question was optional and answered only by those who had ARB training (65% of the drivers). It is of concern that the drivers did not appear to feel any substantial benefit from receiving professional training as a result of an accident or incident. I was aware from observations and discussions with drivers that the majority of them, in the absence of what I would regard as effective safety training, tend to develop a personal construct Kelly (1970) so that the drivers carry the narrative that accidents are an inevitable consequence of delivery driving. The influence of this kind of personal construct regarding driver safety is a commonplace finding in studies of risky driving behaviour in young people This was conducted in our location Y CFC and showed an immediate intervention at a low level was almost as effective as a full on-the-road training session. (Fergusson *et al.,* 2003) but less evident in studies of high-risk older drivers (Stalvey *et al.,* 2000).

What this finding demonstrated was reduced self-efficiency even after remedial training had taken place. Its continued appearance among experienced professional van drivers reinforced my determination to embark on a review of training in general (not just ARB) and a revamp of Tesco Dot.com's approach, which I would call Next Generation Training.

There are many cultural influences in an operation such as location X, which will influence the effectiveness of such training, but it is important that the value of a qualified driving instructor delivering training is sustained. A possible alternative to practical training would be online training, something I am developing at the moment, as the responses from the driver can be harvested and stored for further reference.

Question 5

Would you say that you take risks when driving a Tesco Dot.com van?

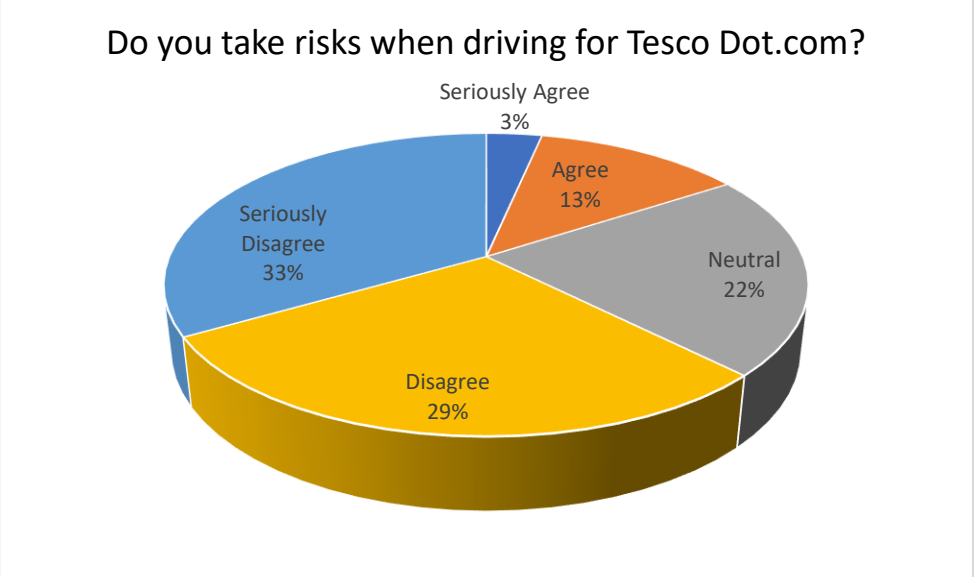


Figure 30 Shows the response of Drivers to taking risks when driving for Tesco Dot.com

Only 24% admitted to taking risks when driving for Tesco Dot.com. It is still a big issue that in a population of nearly 500 drivers, approximately 125 are apparently content to take risks while driving a Tesco Dot.com van. This is obviously unacceptable and has led me to innovate and develop an advanced driving qualification in conjunction with The Royal Society for the Prevention of Accidents (RoSPA). The qualification will be equivalent to an NVQ level 2.

Question 6

Does the safer driving report help you to improve your driving?

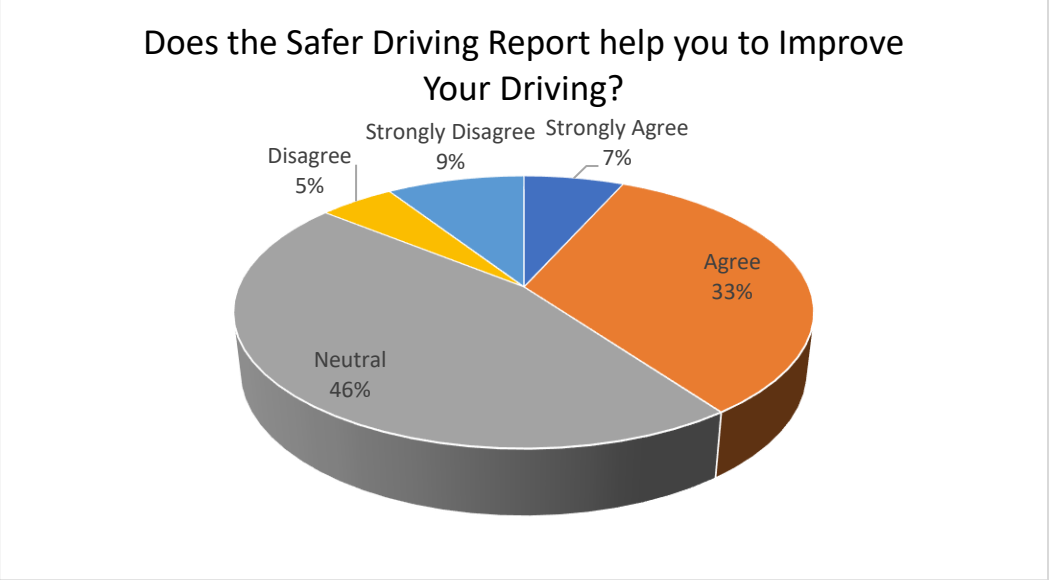


Figure 31 Shows the response from Drivers about whether the Safer Driving Report improves their driving

Only 40% of drivers stated that the safer driving report displayed within the Tesco Dot.com department each month had a beneficial impact on their driving. A concern is the fact that approximately half of the drivers felt no benefit from receiving data on their driving.

Question 7

Do you think tracking driver behaviour helps improve road safety?

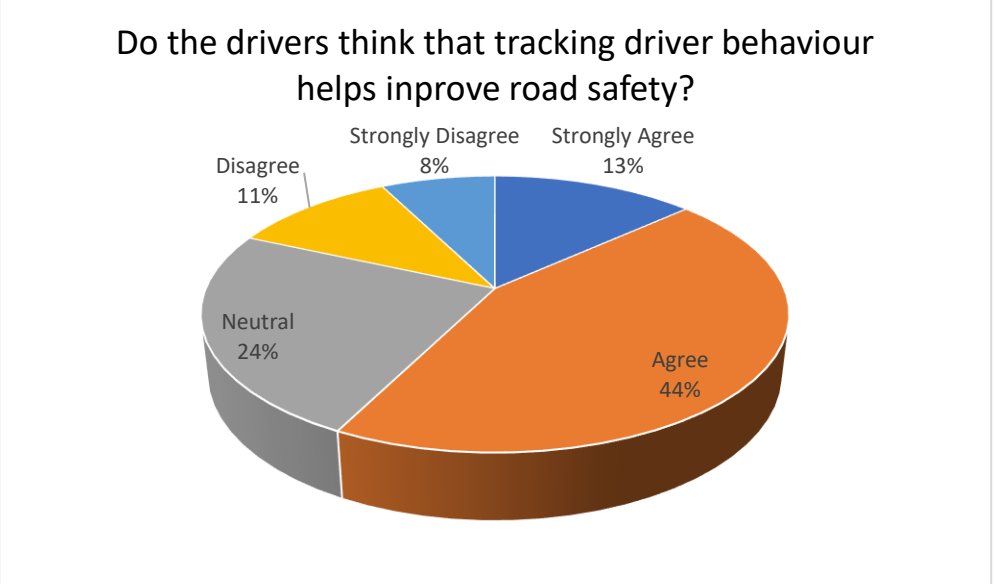


Figure 32 Shows the Response from Drivers Regarding their opinion on whether Tracking a Driver's Behaviour helps to improve driver safety

The response from the drivers regarding the implementation of telematics was refreshing as only 19% registered a negative answer. Their response probably reflects the fundamental change in the drivers' attitude to telematics, as it was only four years since telematics had been introduced at location X, much to their initial dismay. At the time I had witnessed an enormous negative backlash from the drivers as to its implementation.

Question 8

How concerned are you that you could be injured while driving a Tesco Dot.com Van?

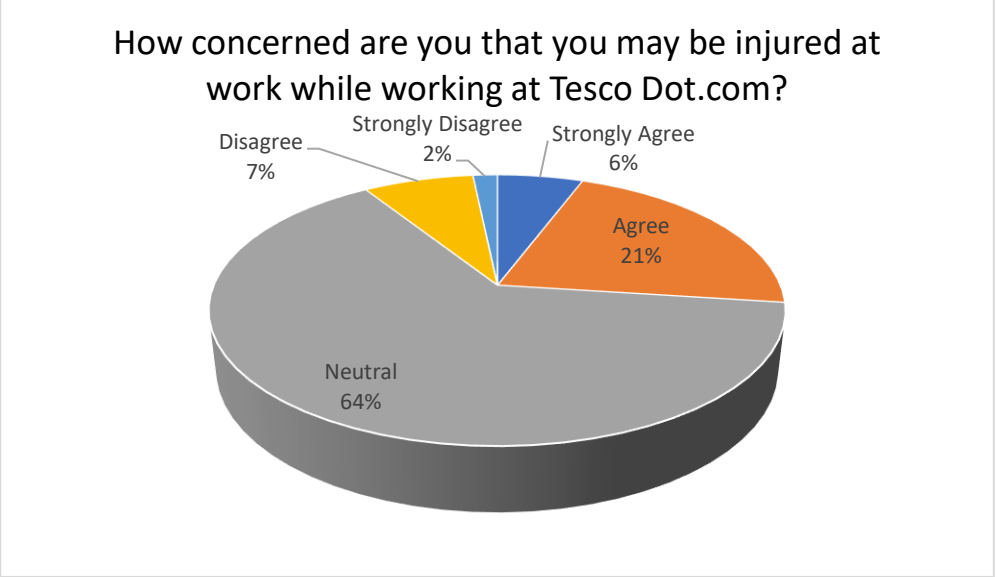


Figure 33 Shows the Response from Drivers to the Concern of being injured at work

Many drivers tend to be concerned about being injured at work. I was both surprised and concerned to hear that 28% of drivers voiced a concern that they may come to some harm while working for Tesco Dot.com and this result will require further investigation. I am aware that drivers are worried about their safety when delivering to certain parts of London, particularly in the evenings, weekends and when the schools are on holiday. Fortunately, assaults on our drivers are very rare.

Question 9

Do you enjoy your job?

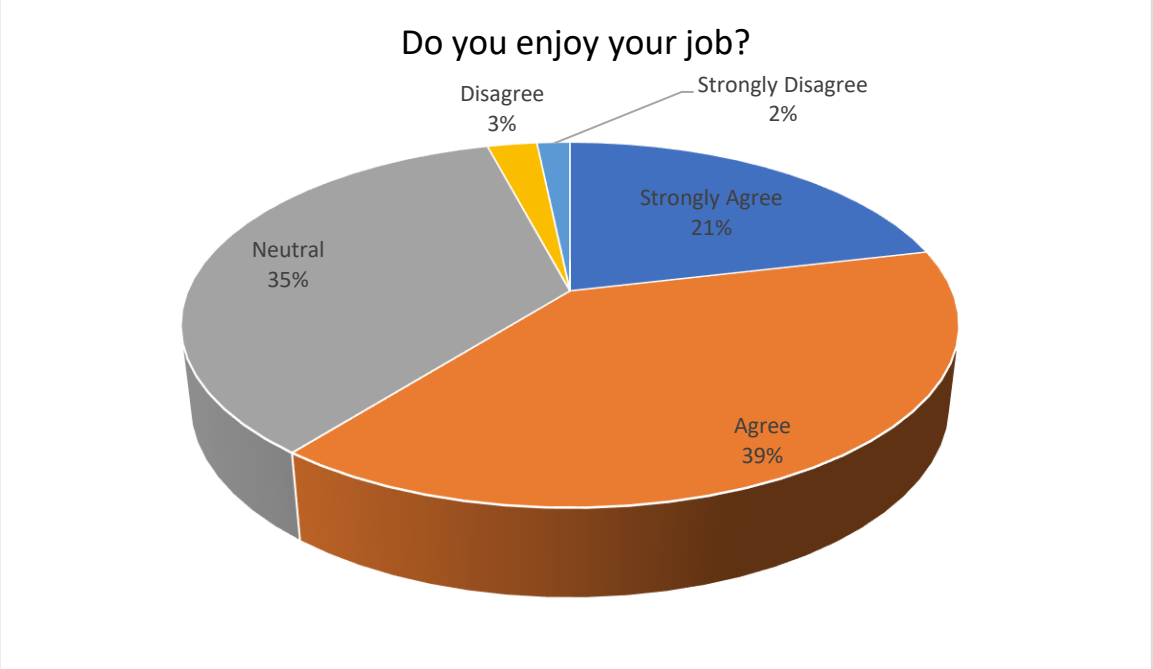


Figure 34 Shows that the majority of drivers enjoy working for Tesco Dot.com

It was pleasing that with all the concerns that drivers have expressed and the professional reservations that I hold, only 5% of drivers expressed a negative view of enjoying working at Tesco Dot.com.

Question 10

Has your driving changed since working for Tesco Dot.com?

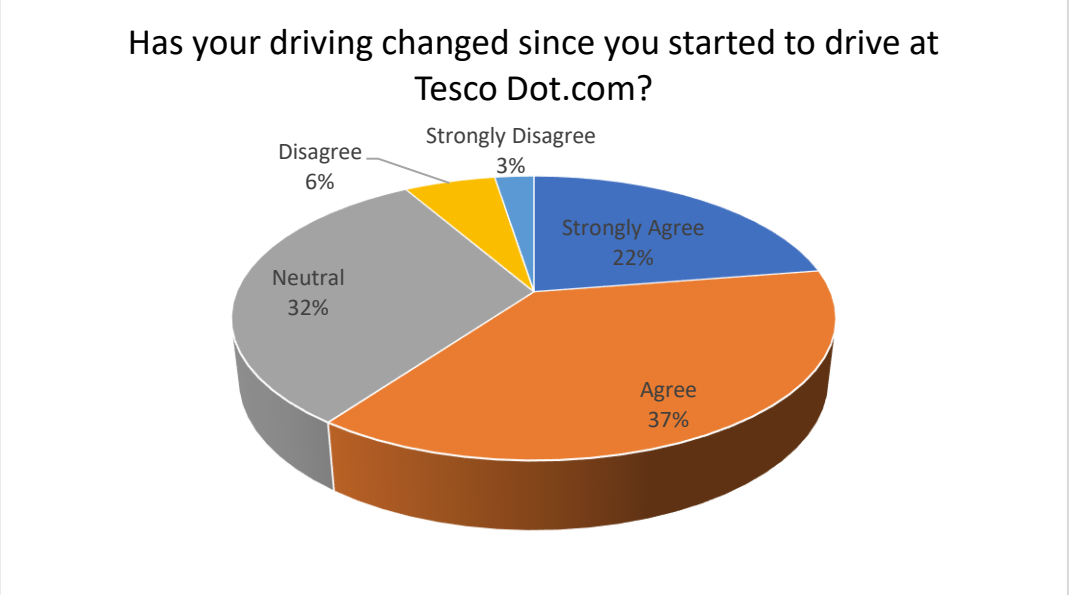


Figure 35 Shows the number of Drivers who thought their Driving had changed since driving for Tesco Dot.com

It was interesting to observe the fact that only 3% of drivers strongly disagreed and 6% disagreed that their driving had not changed since starting the job. I am aware that the question is open to interpretation but, as previously stated, it was important that the drivers felt comfortable answering the question. What it tells me is that there is a need to survey our drivers more often. Our yearly delivering our best would provide a perfect opportunity to achieve this.

4.14 Observations

I found one of the key positive aspects of being a functional professional practitioner is that I was able to get involved with the workforce in a real-world environment as they undertook their normal duties. I found one of the most productive ways of gaining true insights into how the workforce thought was to put on a high visibility jacket, go out into the yard with the drivers, work with them, buddy up and effectively spend an entire shift with them.

This whole process has given me tremendous insight into both the drivers' and managers' perspectives on their expectation of professional behaviour and how these can contrast dramatically between these two groups, as well as in relation to the company's expectations. The act of simply observing an activity needs to be enhanced by

conversation and questioning. This is important in order to gain an understanding of motivation and thinking, for example when a driver is undertaking their legally required roadworthiness checks of the van prior to starting a shift. By talking and working with the drivers and managers, I have become aware of some remarkable insights into the variations perceived by drivers and managers as to what is expected both professionally and behaviourally by each other and the Company. For example, the act of simply observing an activity needs to be enhanced by conversation and questioning, relating to the driver's actions. This is important, to gain an insight of what the driver's motivation and thinking is when they undertake their legally required roadworthiness checks of the van prior to starting a shift.

Exploring this disconnect in a driver's priorities compared with that of the company's is key to moving towards an understanding of why systems and policies in the workplace fail. A useful example of this would be a semi-deflated tyre on the van. A driver may just question whether or not it could cause an accident, whereas the company will also be thinking about minimising unnecessary wear and tear as well as being very mindful of the expense of excessive fuel usage when driving a vehicle with such a tyre.

Spending this time with the drivers over a significant period of time enabled me to gain a true insight into the fact that many drivers have a binary, black-and-white appreciation of risk and danger, and the majority would only question whether they personally could get hurt or have an accident as a result of a defect. What was a surprise was the drivers' general lack of concern regarding the possibility of being blamed by authorities for an accident and the subsequent impact that such an event could have on their ability to work and earn a living. This occurrence conflicts with the training that drivers receive prior to starting work at Tesco Dot.com, where the various shades of grey are explored in detail. For example, why it is important to check a tyre and what to check for is all covered, ranging from a brand-new tyre to a dangerously defective one that would lead to prosecution or a possible accident.

When you question a driver and ask their opinion on what to check for on a tyre, many would just look at a tyre and say: "It looks ok to me, it's not really flat, so I will attend to that later"; as you can imagine this rarely happens. This is a direct contradiction to the expectation of the company and that of the driver's training when detailed information is given regarding:

- Tyre tread depth
- Uneven wear and its mechanical implications
- Split cuts in tears

When you take this information and are aware of attitudes to such a basic safety principle and then extrapolate that across the variety of tests and inspections that we request a driver to undertake, I am conscious of a concern for the general safety of our van fleet in between services and throughout the standard working day, week and month.

While shadowing drivers out on their standard delivery routes, it has given me a tremendous insight into their attitudes and behaviour towards certain major aspects of driver safety. This manifested itself when comparing the telematics reports generated by the company and their software partners Microlise to that of the driver's own personal behaviour and their interpretation of the telematics data.

4.15 Influence on Tesco Dot.com and 'My Life at Tesco Dotcom'

In this section I discuss the two bottom rows of Table 5 in an understanding that the influences on Tesco Dot.com impacting on the development and reception of innovations, have at the same time been intertwined with my own changing role in the company. The row relating to me shows my progress through a range of roles and responsibilities over the eight to ten-year period in which the case study has taken place. During this period, I 'graduated' from being perceived as an industry expert and trouble-shooter to becoming a more integrated member of the decision-making process Reck (1984). Even the change of job title from Occupational Road Risk Manager (2010) to Driver Safety Manager (2016 to date) is an indication of the shift towards an increasing acceptance of my view of driver safety as entailing more than risk management to encompass a more holistic change of culture.

However, not all of the changes in culture can be attributed to my agency even in the relatively circumscribed area of driver safety. Influences on Tesco Dot.com have included the wider legislative levers discussed in previous chapters (the external context) and significant organisational restructures (internal context). Other major influences as described in this chapter have been fatal RTAs and a catastrophic failure occurring in the internal context, which caused a major shift in the company's readiness to be influenced by the external context. These dimensions of change have threatened to destabilise my project goals as much as they have facilitated opportunities for change. The events listed in Table 5 are merely representative of some 24 major additional events, which could have been listed. The last three years of the case (2013-16) saw unprecedented change across the organisation as a whole, changes which at the time of writing show no sign of abating.

My life in Tesco Dot.com has been varied and interesting. My professional development has been sizable, and I am now recognised as the expert in my field and am consulted throughout the company. My work outside the company has been influential in many areas,

particularly in the development of The Freight Transport Association's (2014) 'Van Excellence Programme', Driving for Better Business (I am one of six champions) and supporting an online training programme for transport managers.

Initially, I was a driver training manager responsible for the recruitment and development of drivers in three successive customer fulfilment centres (CFC) positioned around the M25\London. In early 2012 my role developed into the company's Occupational Road Risk manager responsible for heading up a development team, the main role of which was the training and development of the driver safety and compliance team (DSC). Early in 2016 my role changed again to Driver Safety Manager, primarily a consultant to the head of driver safety and compliance team; my role is now focusing on the strategy and development of the policies and processes affecting both the driver safety and compliance team and the wider van delivery driver population.

During the period of my studies, there are significant events that have been predesigned and planned for as well as unforeseen events that have both focused the minds of the driver safety compliance team and the leadership team based in Head Office. A portion of my job role is the training of managers in obtaining their DVSA Approved Driving Instructor qualification. Throughout this training and during my normal daily duties I am in constant communication with DSCT. This time provides me with many different touch points to engage in fact-finding and data collection within the team. During these sessions, much is communicated to me relating to operational concerns. This facilitates in discovering themes and commonality that I can communicate to my line manager who has overall responsibility for drivers' safety.

Many of the concerns voiced by the DSCT stem from the tribalism make-up of many Tesco departments within a single operation, overseen by one senior store manager (SM). The DSCM role is to advise and steer an operation on the correct path to maximise safety and minimise risk. It is vital that drivers are recruited to the correct operational framework so that their shift patterns cover a broad span of both the working week and the working day. A typical strong structure would be a three-day shift and two evenings. If this format is adhered to, then the minimum of drivers will be employed to provide cover for a seven-day-a-week operation. The additional bonus is the fact the driver is employed as full-time staff on a 36-hour week, making attracting staff easier to achieve. This format would be the backbone of the operation forming approximately 90% of employee hours, with a few part-time roles to fill in any gaps. This format works well in Tesco Dot.com but flies in the face of the new company mantra of a flexible workforce.

This dichotomy of main business structure and Tesco Dot.com stand-alone structure is a perpetual point of friction and discourse. The result is that it has a major impact on some operations, such as location X, where last year over 1,000 driving assessments were conducted, yet location X has a current driving population of approximately 480. The move to flexible contracts, in theory, is reasonable but often the contracts offered are 15 hours guaranteed, flexed up to 36 hours; this can become a very emotive position to place new or potential drivers in. The bigger picture across the estate is of greater concern to me as I conservatively estimate that we have approximately 3,000 more flex drivers than we require. Although this fact does not impact on the overall wage costs, the recruitment process and uniform costs amount to over £6 million. An interesting position to find yourself in, as the energy for the flexible contract is generated from our business finance managers, just one of many unforeseen hot spots within the company.

Throughout my observations, it became clear to me that the dilemmas facing Dotcom mirrored closely that of Pettigrew and Whipp's framework of CCP on the impact that content (i.e. the policies, objectives, targets) PLUS external context (PEST) has on the effort to promote an organisational culture of driver safety. All the evidence from studies in this area (see Chapter 2) shows that energies for change cannot be conjured up over a short period or through the pulling of a single lever Serrat (2017). The evidence I have to hand for the period of the case study suggests that the internal context was not consistently receptive to the kinds of cultural change needed; it is work in progress. CCP does not have the answers, but it provides a diagnostic tool.

Following an analysis of the data I look at the influence of context and at my own role in the innovation journey Van de Ven (1993). I was particularly keen to examine the effect of policies and procedures relating to driver safety in the lived experience of managers and front-line staff. In parallel to this I wanted to explore: the extent to which compliance was part of the company culture; how compliance might be related to the relative success of innovations; the relationships between specific groups within the company; the perceptions of the importance of driver safety amongst these groups and the part that they could play in its development and sustainability; and finally, the impact of my own changing role.

4.16 Lack of Van Drivers' Understanding

The fundamental problem with most of the van drivers within Tesco Dot.com is that they are car drivers that happen to hold the vocational rights to be the driver of a 3.5 tonne van on a standard car licence. If you passed your driving test before 1997, you could drive a 7 tonne truck on a car licence.

A tremendous level of investment into the training and development of drivers has been undertaken since 2006. However, it is still challenging for the DSCMs to influence the stores to follow company process, which has been designed to minimise the risk of injury and prosecution to our drivers and provide the management team within the store legal compliance within the UK legislative framework. On top of this, drivers are still failing to take their legalities seriously as part of their everyday duties and are regularly leaving themselves open to prosecution. This apparent lack of concern leaves many of the DSCMs exasperated by the institutional abdication of responsibility (no one is particularly accountable), so the working environment appears to have a feeling of 'no one cares!'

An observation that has stuck with me is that when you talk to individuals, either drivers, trade union reps or managers, they all show a concern and a level of care for the environment that they collectively work within but display little discernible collective drive to improve the overall safety and legal compliance within their control. When confronted with or challenged over an event, the participant drivers all clearly vocalise their understanding of what is required of them. When I escalate the problem to the management team, they also show an understanding of what should have taken place. I can only conclude that there are too many elements involved in the running of the operation, so accountability is watered down to a collective malfunction. This effect by no means is the norm in all operations, but there are a significant number of stores that fall short of a process-structured operation that forms the ideal model.

4.17 Summary

I went into the workplace and actively engaged with the drivers as they went about their normal daily duties. I was able to witness first-hand how they went about executing their allotted tasks. While doing so I engaged with the drivers, enabling them to express their views and opinions relating to the job and Tesco Dot.com as a whole. The ability to engage with drivers throughout their working day whilst there were driving in and around the operation or at the customer's address proved very insightful.

In addition, the use of questionnaires at one of our South London operations proved extremely useful in collecting relevant data. Being able to talk openly with managers, team leaders and general staff at varying times in periods throughout the years of my case study gave me an overall textured insight into the problems and pitfalls that constantly seem to reappear and have yet to be solved or rectified.

Working side-by-side with managers of my own team throughout this period, again, has given me a fantastic opportunity to harvest information and data regarding these short-, medium-and long-term problems faced within Tesco Dot.com, specifically the lack of

embedded change that has taken place throughout the timeframe of my case study. Within this chapter I have identified and discussed the five main data collection areas that I wished to employ to achieve my research objective:

- Drivers' risk database
- Company documents
- Driver and manager questionnaires
- Interviews with managers
- Observations were taken within the workplace

I structured my case study in the shape of the insert data collection methodology, identifying the groups that I wished to study (managers and drivers).

I designed a strategy that matched my position as an insider researcher, and this facilitated my data capture and real-life observations.

I was able to differentiate between internal and external documents. I designed and constructed interviews and questionnaires to allow for data collection in a non-threatening and relaxed environment, with a high level of ethical consideration.

I utilised internal reports and conversations to capture data as well as works-based observations.

Whilst reviewing the effectiveness of the drivers' risk database and engaging in conversation and interviews with managers, this opened a dialogue that was both informative and constructive. This is the case both in its criticism of the database and the suggested changes that would be recommended to the database.

4.18 Reflections About the Case Study

The case study enabled me to see and analyse processes occurring over time, which was a real benefit. The use of specific models provided a structure for organising and making sense of the data. Researching in the workplace, I was also able to identify opportunities to intervene and/or plan ahead well before all the data had been analysed. This to some might constitute a limitation, but it was always my intention to see any emerging openings for change and act on these after discussion with colleagues. Indeed, in some areas it was imperative that I act in the best interest of drivers and that of the company's reputation. At the same time, I lacked sufficient opportunities as I originally intended to triangulate my data and findings with colleagues in the workplace due to my sometimes marginal place in the organisational chart and the rapid turnover of senior managers.

With regard to CCP, its main value was in helping me to be more sensitive about the context in which I operated and the extent to which this dominated the content and the process of change. In order to create a receptive context for change I had to make sense of a range of variables, not all of which worked cooperatively. For instance, maintaining the simplicity of goals and priorities, translating policy coherently at the operational end and coping with a range of environmental pressures. The model struck me at times as more diagnostic than curative and it probably required input from more perspectives than were available to me over the life of the research.

The way in which Rogers conceives of innovation I found both helpful and very practical in understanding the different propensities of individuals towards change. This theory has also provided a framework for understanding the properties of innovations that will make them either more or less likely to meet with success. While I did not set out to compare the two innovations studied here (the introduction of telematics and the driver safety database), given that they occurred simultaneously, partly by chance, being able to contrast the two has helped me to understand the unique and often unpredictable course of an innovation. Rogers' ideas also gave me a deeper understanding of what would be required to make the second database a more successful venture.

Van de Ven's concept of the innovation journey showed me that the more comprehensive the change, the harder it is to predict with any degree of certainty. This, together with the other two models, indicated the sheer complexity of managing the change caused by an innovation. Of course, I chose these models partly because of my prior convictions about the holistic nature of change and the tasks ahead. To an extent, the models demonstrated something that I already sensed intuitively based on my career trajectory to date. At the same time, they challenged my thinking and assumptions and pushed me to delve beneath simple and simplistic explanations, encouraging me to avoid premature cause-and-effect solutions.

Looking at my research methodology, I am perhaps now more aware of its limitations than I was at the start. Perhaps the biggest caveat is that the period of the case study was not self-contained and is still ongoing. I have chosen start and end points in a pragmatic way and so the case study illustrates innovation in progress and any conclusions must be seen as tentative, because evaluation and impact are topics for further study.

Chapter 5 - Recommendations

In this chapter I outline some of the main practical recommendations for change and improvement based on the findings of my case study. These are recommendations targeted at the internal context of Tesco Dot.com, where I feel my findings are likely to be of most interest and to carry more weight. While the case study analysis stopped in 2016, I have fine-tuned these recommendations in light of the current and anticipated conditions affecting the company, a process that will end in early 2019.

Pettigrew and Whipp provide many clear insights into the dilemmas faced by a large organisation, and their ideas have been tested in several large organisations in the private and public sectors, including the National Health Service. This influence can be seen clearly in an organisation the size of Tesco and their approach is commonly found in Tesco Dot.com. Pettigrew and Whipp focus on:

- Content (Objectives, purpose and goals), or the 'what'
- Process (Implementation), or the 'how'
- Context (The internal and external environment), or the 'why'

It is clear that Tesco has opted for transformational change as a key element of its five-year change programme started in 2014. A risk of this type of strategy is the loss of knowledge and skills generated by wholesale redundancies and forced amalgamations. The long-term effects have yet to be recognised.

I introduced Van de Ven's metaphor for work in Chapter 2, which is useful to reintroduce here having depicted my research and showing the workforce's responses to the two innovations investigated in this case study. The metaphor is helpful in suggesting ways to increase the odds of manoeuvring the innovation through the entirety of its journey from concept to implementation. Van de Ven states that on the uncharted river that is the innovation journey, most people cling to the riverbank, afraid to let go and risk being carried along by the river's current. This idea contrasts well with the concept of organisational change that assumes that when a company comes out of a cycle of change, then it will be in a far stronger position. A company may look stronger on a balance sheet at the end of a financial year, but is it capable of sustaining change and not reverting back to how it used to operate, as this feels more comfortable to managers and staff?

5.1 What I have learnt

What I have learnt from this process is that the concept of one-size-fits-all does not work well in a very large organisation. Flexibility has to be incorporated as part of an overall business strategy; delivering in central London cannot be compared to delivering to the central highlands of Scotland. I have discovered that if you wish to change and develop you need to look outside of your own organisation and see what specialist skills and knowledge can be copied or introduced into the business. For example, in Tesco Dot.com, driver safety experts were brought in to help reduce driver risk. When this was achieved, rather than sustaining this activity, all of these experts were made redundant and accidents immediately started to rise. In addition, very little logistic knowhow was brought into the operation, so the same retail DNA was running what was effectively a logistics operation. Something that has become clear to me is that certain by-products of organisational change in themselves minimise the effectiveness of an innovational change. For example, the constant shifting sands of management, who works where and is responsible for what, diminishes the successful embedding innovation.

Tesco Dot.com had a director for the first seven years I worked there and in the subsequent six we had eight different directors. The constant change of management and direction could not have had a positive overall impact on the operation. Decisions were rushed and the lack of any apparent long term strategy was challenging in the extreme at times.

5.2 Enhanced Legal Compliance

The company needs to adopt comprehensive occupational road risk management policy with full management and driver engagement to support best practice in occupational road risk.

In an effort to reduce the potential for role ambiguity associated with shared ownership, the responsibility for work-related road safety management tasks and accountabilities need to be unequivocally stated in job descriptions across all driver safety-critical positions. This would be designed to avoid the destructive process of delegation, which leads to abdication. All too often managers will delegate tasks to subordinates but are indifferent to the process of confirming that the task has been undertaken successfully. This is an example of the threat induced by collective responsibility. Colleagues included should be:

- Store director
- Store manager
- Lead driver safety compliance manager
- Driver safety and compliance manager

- Dotcom manager
- Lead driving manager
- Operational staff
- Drivers
- General assistants

A new unambiguous driver safety policy needs to be compiled, a copy given to all relative parties and openly displayed both online and in hardcopy within each operational site. The DSCM should be invited by store directors to attend regular managers' meetings, where issues and possible threats can be addressed centrally and at an early stage to gain the support and understanding of the senior managers attending the meeting. This is to avoid the fragmentation of messages to increase commitment, to improve greatly sustained change and legal compliance. This process will need to be constantly monitored as a culture of compliance can often lead to poor safety standards.

5.3 Improved Driving Standards

5.3.1 Assessments

The company should continue with practical driver assessments but raise the standard of these assessments. The DSCs should be trained to approved driving instructor standards (ADI and DVSA). Too many opportunities to improve driving standards are missed through the assessment process; it would go a long way to addressing the quality of assessments if they were conducted by qualified ADIs able to give immediate interactive training, hints and tips as well as best practice guidance. This may well be done through demonstration, which has been proven to be more successful than assessment alone.

5.3.2 Advanced Van Driving Qualification.

The company needs to implement the proposed advanced driving qualification for our van drivers in conjunction with Royal Society for the Prevention of Accidents (RoSPA). The development of this programme would demonstrate both to the drivers and the wider industry the commitment that Tesco Dot.com has to driver safety and occupational road risk. The implementation of the programme will also provide an excellent opportunity for further engagement with our drivers.

Safety messages

Within each operation, a driver safety board should be displayed to encourage further engagement with drivers relating to the impact they can have on the company and the wider community they serve. On this board/safety area should be displayed:

- Any outstanding training required of the driver/development of new drivers
- Store's average mpg
- Date since last accident
- Working days lost through accidents or lifting and handling issues
- Cost of accidents
- Legalities affecting the drivers, drivers' hours, Personal Protection Equipment and safe practice

Safer manoeuvring

The installation of reversing sensors and cameras would reduce the van damage costs considerably as approximately 50% of the company's van damage is incurred while the drivers are reversing or manoeuvring.

Training material

A thorough review should be carried out of all driver training material with the inclusion of video-supported, student led learning programmes. A blend of traditional classroom theory and practical, combined with E-learning.

5.4 Different Delivery Tools and Methodology

A working party needs to be set up to revisit the company's unquestioned adherence to the use of 3.5 tonne vans. Our delivery fleet needs to become leaner and more targeted to achieve greater efficiencies. No longer should we depend upon the industry's go-to mode of delivery. Although a van gives great flexibility in the fact that any car driver is entitled to drive one, there are also some major drawbacks in:

- Driver ability and behaviour
- Poor payload
- Operational profitability

Instead, I would recommend a mixed fleet combining both smaller and larger options than the 3.5 tonne vans that we have grown so used to. Smaller electric vans would be beneficial for inner city deliveries, particularly in London. Larger 7.5 tonne trucks would be preferable

for certain routes in both urban and rural settings (Highland and islands of Scotland) with a longer operational delivery window able to support additional click-and-collect at location. With this new array of vehicles, I would suggest keeping approximately 50% of the fleet at 3.5 tonne vans.

Structuring our drivers' hours so that they are longer and fixed (44 or 56 hours) could reduce our delivery driver numbers from 16,500 to 12,000. These numbers would easily be met by natural churn in staff and the retraining of others to drive larger vehicles. This would result in a 4,500 reduction in drivers needed.

Figure 36 Nissan Note Electronic Van

Figure 37 Mitsubishi 7.5 tonne truck

A move to bigger or regulated vehicles such a 7.5 tonne truck would give the following benefits:

- Bigger payload
- Longer route times
- Greater compliance “Operators Licence” structure
- Greater legal compliance operating under EU driving hours compared with GB domestic driving hours

More professional drivers, fewer vehicles on the road, a mixed fleet would also facilitate the tie up with other areas of the business such as pharmacy. An option available to the company is to utilise the existing delivery fleet in a more dynamic manner. By this, in specific areas, I would use the ability of the van to tow a two tonne trailer, effectively tripling the combined units payload.

Figure 38 Van and trailer combination, 3.5 tonne van and 2 tonne trailers (5.5 tonne)

Although this combination of van and trailer would have to operate under EU driving regulations and have a tachograph, it would provide great flexibility in many areas, particularly in click and collect at location. In my opinion this highlights one of the company’s historical weaknesses; we employ car drivers to drive vans and not professional drivers to drive trucks.

5.5 New picking model

The company may consider moving to a 48 hour delay in the picking up of an order after it has been placed. In other words, order Monday and pick up on Wednesday. Although this is completely out of step in relation of the immediacy of internet shopping it will go a long way to curing substitutions and non-availability, one of the biggest frustrations to our customers (approximately 100,000 subs per week).

5.6 New Database

The implementation of a new improved database is of high importance. However, the output of the database needs to be designed more closely to align with the professional practices of end users. It needs to be simple, understandable and achievable by the driver safety and compliance team. This has always been the Achilles' heel of the original database as explored in detail in Chapters 4 and 5. The new database needs to focus on no more than four main data streams, and these should include: vehicle speed, miles per gallon and incidents/accidents.

5.7 Personal Safety

A new driver's uniform should be designed that is more driver friendly, practical and high visibility. The uniform will be complete in one part rather than made up of several parts as it is today. This will lead to greater safety compliance from the drivers and would help distinguish drivers from shop workers, giving a sense of professionalism.

5.8 Better Driver Engagement

The company goes to great expense each year in freeing up drivers for an improvement workshop described within the company as 'delivering our best'. For the past three years, there has been no worthwhile driver input relating to driver safety at these training workshops. It is of great importance that this is now re-addressed with a greater focus placed on driver safety and occupational road risk. A re-alignment of focus would immediately give a greater engagement between management, driver safety compliance managers and the drivers relating to driver safety.

5.9 Who the DSC team reports to

I have only admiration for the DSCM and support and the essential work they carry out on a daily basis within Tesco Dot.com. It is my belief that their effectiveness would be greatly enhanced if the entire team, including my line manager, who currently report to our 'Fulfilment' Director, reported to our 'People Safety' Director.

There is no criticism of the directors themselves but an appreciation of the increased influence that the team would have when working within a store environment. Too often the team is looked upon by the wider business as driving assessors rather than the gatekeepers of driver safety and compliance.

5.10 Using our Size for Good

In some more rural locations and larger housing estates there could be a need for the company to support the local ambulance service by having trained drivers with a defibrillator installed in the van to act as a first responder.

Chapter 6 - Critical Reflections

6.1 Introduction

This chapter provides a reflective account of my professional learning and journey, which I firstly describe in relation to my activity as a work-based, embedded professional practitioner and then to the DProf programme as a whole.

I have found the entire process of undertaking a professional practitioner case study within Tesco Dot.com an exercise in reflection on my professional practice as well as that of colleagues who work around me as we all strive to achieve a common aim. I feel that I have come a long way in my ability to conduct research and in the utilisation of academic literature and process. I have gained a significant insight into how organisations function and the impact of organisational change, both operationally and personally. One significant element of this research has been experiencing the development of processes and policies only to witness the systematic disregarding of these very same processes and policies, designed to place the company in a position of greater strength and resilience. This was a great example to me in contrasting theory and practice in organisational change.

Driver safety is held in very high regard at head office but there is a distinct disconnect with the managers at the coalface. This fact is compounded by the DSC team having suffered two rounds of redundancies. My main concern with my legacy is the lack of energy within middle management to take responsibility for their own day-to-day running of their operations and their legal compliance.

At all times I have had the DNA of the company in mind to help me predict both organisational and individual responses. This enabled me to prepare my position, readying myself for which kinds of advice and counsel I would offer when requested, or what I would directly suggest to my colleagues. At times I found it hard to keep on the course I knew to be correct when those around me were either unconcerned or holding a different view point. An unfortunate by-product of holding an altering position, often perceived as different to the majority, is that you can be labelled as being negative and disruptive. This can result in becoming isolated and unable to effect change. Key learning that I would convey to others involved in an environment of change is that it is best to avoid confrontation where possible, instead becoming more of a political animal.

It would be all too easy for me to paint a negative picture, but when I reflect on where the company was, particularly regarding driver safety, to where it is today, I can clearly see that both the company and I have come a long way and have created massive improvements. To move things further forward I would involve more key stakeholders, but more importantly

I would keep ongoing and honest, open communication with all groups and individuals affected, including those at managerial level, the drivers and between the stores and Tesco Dot.com. I feel that creating spaces and systems in which this can consistently take place in a productive manner is my biggest challenge moving forward.

6.2 Reflections on the Work-based Research Project Process

Undertaking this research programme has presented me until an opportunity to investigate an important aspect of my profession, the safety of our drivers. In recent years health and safety within Tesco Dot.com have been accorded a much higher profile than in previous years. Although the driver safety and compliance team have won many safety awards over the years, the general approach to safety within Tesco Dot.com was not prioritised in the way it is today. Yet there is still a fundamental attitude from local management that 'anyone can drive a van' and 'how hard can it be to find van drivers?' This indicates we still have some way to go.

Initially, when embarking on this programme, it was neither my expectation nor desire to pursue a doctorate. The energy and direction to start these endeavours came from my director, who was keen to have a highly qualified person within his team who would be in a position to influence the behaviour and expectation of both the drivers and the senior management team within the company. However, although the project timeline transpired to be significantly longer than I had anticipated for a multitude of reasons, the skills and understanding that I have gained throughout the journey have made me a far more rounded individual and driver safety practitioner.

I have enjoyed the practical element of interacting with colleagues, driver safety and compliance managers and the extended body of Tesco staff. The research has enabled me to enter the workplace and engage with colleagues, to have conversations and observe them while they are executing their work activities. The energy and commitment of our drivers working in central London, with large fleets operating out of our CFCs as well as smaller rural operations, are admirable. Based on my own experience on the job and reinforced by my research, I would strongly advise all managers to spend practical time with the drivers. It would be invaluable for managers to experience first-hand the challenges that the drivers face and the ways in which, on the whole, they professionally overcome problems on a daily basis.

What I observed about myself stems from the fact that up until recently, and certainly for the first ten years that Tesco Dot.com employed me, I was considered very much as an outsider. Having joined Tesco Dot.com as a driver safety practitioner, I found it hard to understand the company's lack of focus on driver safety. The fact that I was not accepted into the DNA

of Tesco during the initial stages of my job was, on reflection, a great benefit as it enabled me to stand back and objectively consider the benefits and disadvantages of the processes and programmes that were already in existence and those that were being considered in a form of organisational and structural overview. Equally, my 'outsider' status enabled me at times to exploit my position as a professional practitioner to pursue the project. When reflecting back on my initial ambivalence about my outsider status, I realise that I tended to work too much in isolation. I am well respected at work, but my role, particularly as a result of some of the structural changes in the company, has left me feeling at times removed and depressed. Having become more aware of this, particularly over the past two years, I have made a great effort to bring myself closer to the wider national team and my line manager.

One of the problems that I found in Tesco Dot.com is the way in which management and leadership teams within store operations are drawn almost exclusively from internal candidates. With only one exception, all senior managers/board members are now made up from non-Tesco personnel. Tesco Dot.com's culture and the way that it functions is like a traditional Tesco operation, which overall could be said as being no bad thing Tesco's success is there for all to see. The quandary I have is that this style of management, in my opinion, is not the best fit for what I would describe as a logistic operation.

My focus and energy have always been on reducing driver risk. Although the wider organisation appreciates what I am trying to achieve, there is little energy to commit to organisational change that may appear to move away from what I would describe as 'the Tesco way'. A good example of where my philosophy would be in conflict with many present operations would be the way in which drivers are flagged on our safer driving report. The process for a driver who is found to be travelling at more than 20mph over the posted speed limit is final written warning or possibly dismissal, depending on the circumstances. Many store managers would be reticent to impose this practice, which they may consider as a draconian approach. This steps out of line with what has been agreed with the Trades Union and what is clearly communicated to the drivers when they join the company. This is an example of clash of practice between retailers compared with logistics, as the same store manager would have no compunction in dismissing a shop worker for eating a Mars Bar.

The challenge is that in the store manager's mind the dismissal of a shop worker would have little impact on the overall operation and the individual can be readily replaced with very little training. This is compared with a driver who is increasingly difficult to replace and would require four weeks' training before being independently operational. This being said there have been considerable improvements made over the majority of the estate.

However, it must be suitably acknowledged that one of our largest standalone operations failed to performance manage (discipline) 90% of incidents that had occurred as a result of poor driving. There is a constant tension between managing poor behaviour and the perceived operational need, in other words, 'the show must go on'. Yet since Dave Lewis has become our new CEO there has been a noticeable move to colleague safety with a new mantra of 'everyone home safe every day'. This new focus on safety I would hope would lead to a better focus on safety from store managers in particular. Trying to invoke organisational change with regard to driver safety at a local level could be compared with trying to change the direction of a super tanker with a rowboat. I have undertaken his challenge while also stretching myself by beginning the DProf. I have to admit to finding the academic requirements for achieving a doctorate a daunting proposition. I would describe myself as a practical hands-on individual and not an academic scribe able to capture into descriptive English what I have seen and believe to be the case. I have had to develop new skills I would not have anticipated learning or mastering.

There were several interruptions that were unexpected throughout my investigations that lengthened the process. I had several changes in university supervisor that hampered focus and direction; this was unfortunately compounded by a few bouts of illness and two major organisational restructures in the company. Throughout this project, I have been working as a sole professional practitioner. Although my immediate line manager has always offered his support in conjunction with my original director, since this director's retirement I would be surprised if any party above my direct line manager was aware that I have been conducting investigations for my project. The fact that I have been working alone on this project has made the task of completion even more challenging and I would have felt much more supported working as a group.

I am fortunate that the principal element of my job role is the practical evaluation of processes and procedures, as well as their design and development. As a result of this, both drivers and managers are used to me being in their working environment in a developmental and strategic standards function. Whilst undertaking my observations I made every effort to not compromise or change others' behaviour by my presence. I only made an intervention if there was an issue with safety. An example of this took place when observing a driver load his van who was then asked by a manager if he could take additional deliveries. Both the manager and the driver had mis-calculated the overall payload, which would have resulted in an overweight van. I intervened, clarified our parameters of operational weight, so facilitating that the operation could continue in a safe and legal fashion.

Through the process of my observations within the workplace, one key aspect of which I have become very aware, is the need to be able to ask individuals and groups questions. Linked intrinsically to this is the ability and need to listen and not prejudge the responses you receive. A good example is the company's adherence to the Health and Safety Executive, so that drivers receive adequate rest between shifts and over a seven-day period. Interestingly, this is often misconceived as the company preventing drivers working desired overtime. In some of our operations, this fundamental misunderstanding has caused ongoing friction between managers, drivers and trade union representatives. When you investigate this phenomenon and analyse the behaviour of each of the individual stakeholders, this becomes an example of situational thinking. I became aware that there was a need to have an open and honest conversation with all stakeholders in the situation. A workshop/meeting facilitated the development of a fundamental understanding from all parties by demonstrating how legal compliance and driver safety should be placed at the highest level. This approach should be carried out in such a way that all are able to recognise the benefits so that safety is not compromised in the future.

6.3 Sharing and Disseminating

As previously described, throughout the process of studying for the doctorate colleagues have been aware to a varying degree that I was undertaking the DProf programme. In the earlier stages my academic activity was more widely known about, which provided a level of support, yet over time as a result of some structural changes very few people were aware of my research. In the latter stages of the project I found this lack of recognition and awareness of my academic commitments quite debilitating. However, now this stage of the process seems to be coming to an end I feel in a far stronger position to share my thoughts, concerns and aspirations with a wider audience. I now feel that I have been given, and have applied, the tools to communicate more effectively within the company, which I can now do far more efficiently in written emails, and particularly in producing new training material. I will always be grateful for undertaking this programme and process (Appendix 23). The dissemination of my knowledge is more readily achieved outside of the company. Tesco Dot.com is widely recognised as being in the forefront of van driver safety. Working with organisations such as Freight Transport Association, RoSPA and Driving for Better Business has given me an opportunity to talk and present to many companies and organisations ranging from Kent Fire and Rescue, Johnson and Johnson to Speedy Tool Hire. To this end, I was pleased to be invited to be one of six Driving for Better Business (Appendix 8) 'Ambassador Champions'. This will give me a further opportunity to engage with the wider transport industry regarding driver safety and to reduce Occupational Road Risk.

Throughout the time of my university studies, I have changed positions several times, moving me away from a hands-on role to that of a strategic consultant. The principal predicament I faced when joining the company was the challenge of influencing the business to introduce policies and procedures that required amalgamating and cross-referencing the following:

- UK Law
- EU Law
- UK Health and Safety Guidelines
- Industry best practice
- Tesco Dot.com policies

The majority of the changes that have taken place within Tesco Dot.com over the last ten years have been driven by adhering to a combination of Health and Safety legislation and GB domestic driving rules. To achieve this Tesco Dot.com has effectively created the benchmark for van driver safety expressed by the company through its philosophy of, 'it's the right thing to do for our people' rather than as the necessity of legal requirement. This fundamental lack of understanding of how to look after drivers and manage correctly an ever-growing population of outreach workers formed the platform for my work within the company and my resulting project. The problem resulting from this self-benchmarking strategy within Tesco Dot.com is the constant challenging back from other areas of the business, questioning 'is this a legal requirement?', as its implementation and maintenance require focus and energy from the local management teams.

Maintaining and improving driver safety is in itself both challenging and fluid; it is a complex mix of balancing legal compliance with meeting the demands of a rapidly expanding business with no fixed operating model. To keep a large group of outreach workers and the public at large (including other drivers and pedestrians alike) safe is far from an online monitoring and box-ticking exercise. It requires a constant focus to maintain standards, linked with good communication with the drivers, which should often be conducted face to face. The fundamental success of the whole process is reliant on appropriate performance management covering all levels of driver engagement to preserve the systems and processes in a fair and robust manner.

The challenge is not just to innovate and create change but also to maintain the products of change over a considerable length of time. Furthermore, there is the additional challenge of evaluating the change and modifying this in response to ongoing influencing factors, including those relating to process, content and context (Pettigrew and Whipp, 1991). When positive change does take place, there are great rewards to be gained in terms of the legal

protection for the company and its employees as well as in bottom-line savings. Conversely, poor practices lead to a greater negative legal and health and safety exposure. This is most evident when employing someone who holds another job external to your own organisation. Employing a driver for only four hours in the evening will look totally innocuous to a retail manager. However, if the driver in question started work at 4:30 am that morning they become a high-risk driver due to the hours worked, fatigue and lack of adequate rest. They may not have actually broken any laws as such, but it is far from best practice. This in turn forms a perfect storm with its potential to damage the company's reputation, bringing into question its ethical practices and possibly endangering life or causing loss of life.

I am confident in dealing with any conflicting or problematical issues that have arisen or may arise from my reflection over the last ten years. Operational issues are and have always been challenging, but if people safety is at the forefront of our senior managers' thinking, then the cycle of review, development, implementation and sustainability is more effectively adhered to. Sustainability will only be achieved if the results of the two tectonic masses of change and implementation colliding can be controlled and monitored over time. The aims and objectives of this project have been to capture and demonstrate the challenge of implementing change. The research has endeavoured to show how this can be achieved and how to embed a positive, behavioural shift.

6.4 Summary

When initially embarking on my final project, the sole focus of my attention was the effectiveness that our driver risk database has on driver safety. What I had not anticipated was that over a short period of time I would become aware of the actual ineffectiveness of the database and that driver safety was a subject that touched a wider audience than I first imagined within Tesco Dot.com.

As I broadened the scope of my investigation, the relationship between various stakeholder groups developed into the most influential aspect of driver safety within the company. I was drawn to investigating the influence that provincial management, support staff and drivers all had on reducing driver risk. I wanted to understand why robust and well-structured processes and policies were regularly ignored and flouted, with little awareness of the impact of doing so either as an individual or to the company.

Whilst conducting my investigation, Tesco underwent several major organisational changes and it could be expected that these changes would have a negative impact on operational issues.

However, over the nine years of my insider practitioner research, I have discovered that the rationale for the apparent absence of focus on driver safety could be summarised by me in:

> An operation administered and managed by retailers, dependent upon car drivers operating in large box vans, instead of an operation administered and managed by logistic experts reliant on professional drivers.

The world within a modern supermarket is a closely controlled safe environment. When you leave that environment and effectively bring the supermarket to 99% of all front doors within the UK, to sustain control and minimise risk becomes immeasurably more challenging.

Appendix 1 – Interviews

[redacted] 15/10/2015

This interview was conducted in Croydon Dotcom Centre at 11am to 13.00 pm

Q **How long have you worked for Tesco and what is your history so far?**

A I started at Tesco in 2006 as a CDA in Croydon, direct from Poland recruitment. I then moved on to CDA assessor, and then to Training Manager in 2009.

I now cover Croydon and Crawley DCCs and also for a short time a coluges group including the Isle if White, a total of 1,300 CDAs.

Q **How often do you use the data base?**

A I use the database on average between once or twice a week.

Q **What are the strengths of the database?**

A It helps me to prioritise the training.

Q **How does the database help you in your job?**

A It gives the visibility of all the drivers I have and their history. It gives me control of who has or has not followed company process. It also gives me the tool so I can talk to the store managers regarding the most high risk drivers are so the store manager can challenge his managers on whether they have executed their jobs correctly.

Q **What would you change on the database and why?**

A I would change the risk element so I could see if different groups of drivers had the same or different types of accidents. I would like to see the difference between C, C1 and B category licence holders.

I would want one score to rate a driver and not the behavioural and corporate risk scores, as the corporate risk is now out of date as we do not as rule undertake the validation process anymore.

I would add into the database a picture of each driver to avoid any misunderstandings or mistakes.

There is no evidence of activity so fraudulent activity can be entered.

Q **What would you change regarding what could come off the database to improve, it and why?**

A I would not take anything off, but change how we get a final score.

Q **If you were in charge of the driver training team what would you change in relation to the database?**

A Each training managers review will be based on the accuracy of the database compared with actual hard copy records. How the training of the drivers is mirrored on the risk register shown on the database.

Fig A1 Interview with Southern Manager

Appendix 2 – CDA Satisfaction Questionnaire

Please answer to the following statements and circle around the box that meets your opinion:

1) Bronze Training Day is useful

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

2) The Validation assessments are Fair

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

3) The Accident Review Board is Fair

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

4) The Trainers are easily accessible

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

5) The Defect Reporting Easy to Use

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

6) Delivery delivery times are achievable to meet

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

7) The Vans simple and safe to use

Strongly Agree	Agree	No comment	Disagree	Strongly Disagree

Any further comments:

Appendix 3 – Light Commercial Van Driver Risk Questionnaire

Light Commercial Van Driver Risk Questionnaire

Gender: Male Female

Age: 18-21 22-30 31-40 41-50 51-60 Over 60?

Q How long have you worked as a CDD? Years

Q How many years have you been driving? Years

Q When driving for work how many accidents have you had? Number

Q Do you always where your seat belt when driving a van? Answer

Q Do you ever break the speed limit, if so by how much?

Never 5mph 7mph 10mph 15mph 20mph or over

Q How do you judge what is a good distance between you and the vehicle in front?

Q Has your driving changed since you started driving for Tesco?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Has your driving got better since driving for Tesco?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Has your driving got worse since driving for Tesco?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q If you have received any ARB training, has it improved your driving?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Does Tesco give you enough training and support helping you to become a better driver?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Light Commercial Van Driver Risk Questionnaire

Q Would you say that you take risks when driving a Tesco Van?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Does the safer driving report help you to improve your driving?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you think tracking driver behaviour helps improve road safety?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q How concerned are you that you could be injured whilst driving a Tesco van?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q I enjoy my job.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q What do you feel is the greatest risk to you when driving for Tesco?
A

Q What would make you drive a Tesco van in a lower risk style?
A

Q In your view what are the 3 most high risk behaviours or activities that a van driver can have?
A i)

ii)

iii)

Q What could Tesco do to make you a better driver?
A

Q How many times in the last 12 months has your driving skills prevented and accident from happening?
A

Appendix 4 – Database Questionnaire

Database Questionnaire

Date: _____

Time: _____

Q How Many Years Have You Worked For Tesco? _____

Q How long have you worked in the Driver Training Team? _____

Q Are you a Training Manager? Yes/No

Q Are you an Assessor? Yes/No

Q Have you Access to the Database? Yes/No

Q Do you find Accessing the Database Easy? *Circle as appropriate*

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you find the Database a Useful Tool in Doing your Job? *Circle as appropriate*

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you find the Database Makes your Job Easier To Do? *Circle as appropriate*

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you Access the Database at Work only? Yes/No

Q Do you Access the Database at Home only? Yes/No

Q Do you Access the Database both at Home and Work? Yes/No

Q How Often do you Enter Data onto the Database?

- Daily ☐
- Weekly ☐
- Monthly ☐
- Every 3 months ☐
- Every 6 months ☐
- Other _____

Q Do you Look for Information on the Database?

- Daily ☐
- Weekly ☐
- Monthly ☐
- Every 3 months ☐
- Every 6 months ☐
- Other _____

Database Questionnaire

Q How long do you usually Spend Working on the Database at a Single Sitting?

- Under 15 minute's ☐
- 15 mins to 30 mins ☐
- 30 mins to 1 hour ☐
- 1 to 2 hours ☐
- 2 to 4 hours ☐
- Other _____

Q Do you find the Database User Friendly?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q How Confident Are you that the Information that you enter on to the Database is Accurate?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q How Confident are you that the Record Card held in the Store showing the CDAs Signature can be found?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you find the Information that you need on the Database Quickly and Easily?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you find it easy to Print from the Database?

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q Do you find it easy to Print data in the Format you Wish? i.e. High to Low or longest to shortest

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Q What do you look on the database for the most

- Driver Behaviour ☐
- Out Standing Training ☐
- Speeding ☐
- ARBs ☐
- Contextual speeding ☐
- Corporate risk ☐
- Other _____

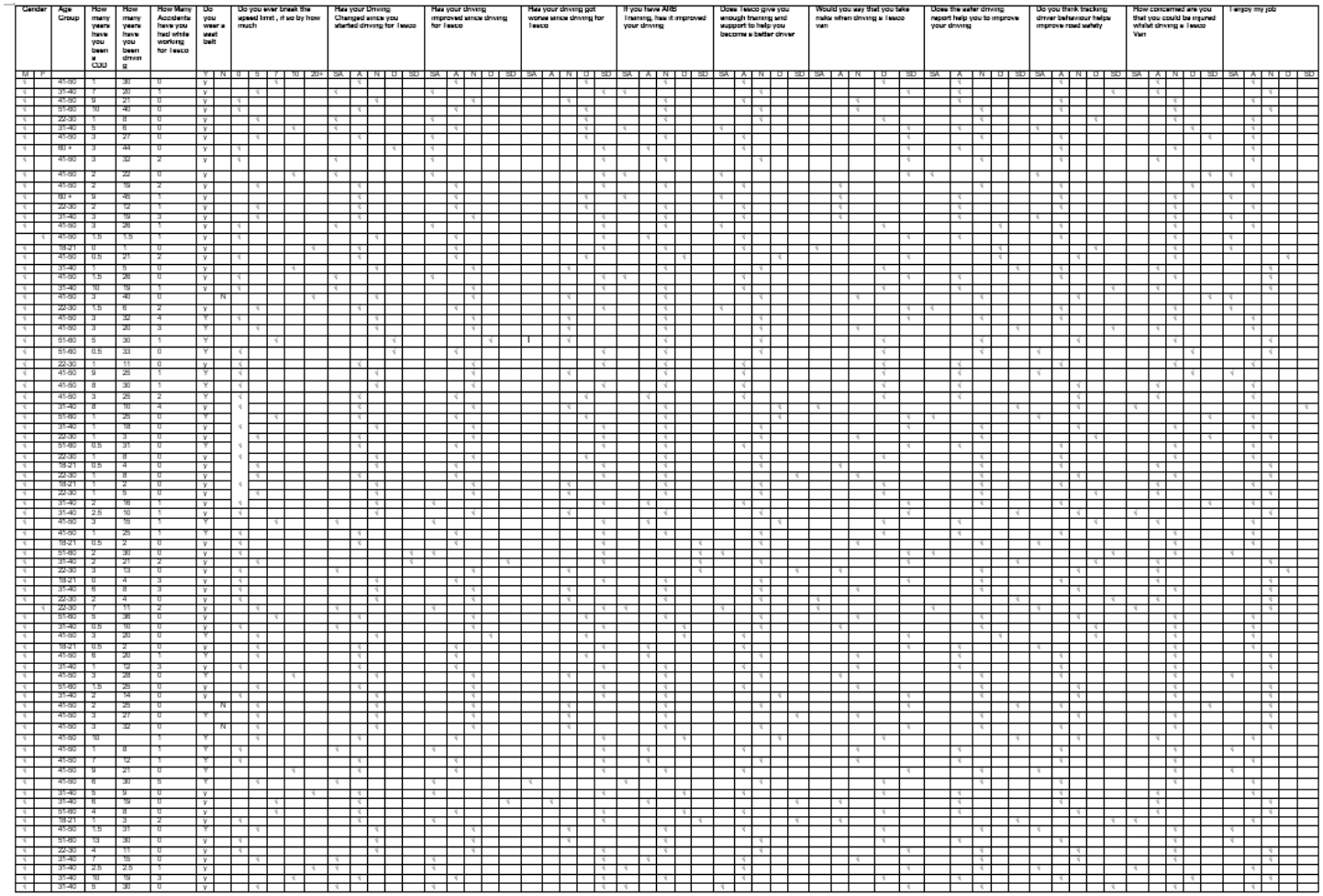
Database Questionnaire

Q Please State what additional information do you think should be up-loaded onto the Database?

Thank you for completing the questionnaire

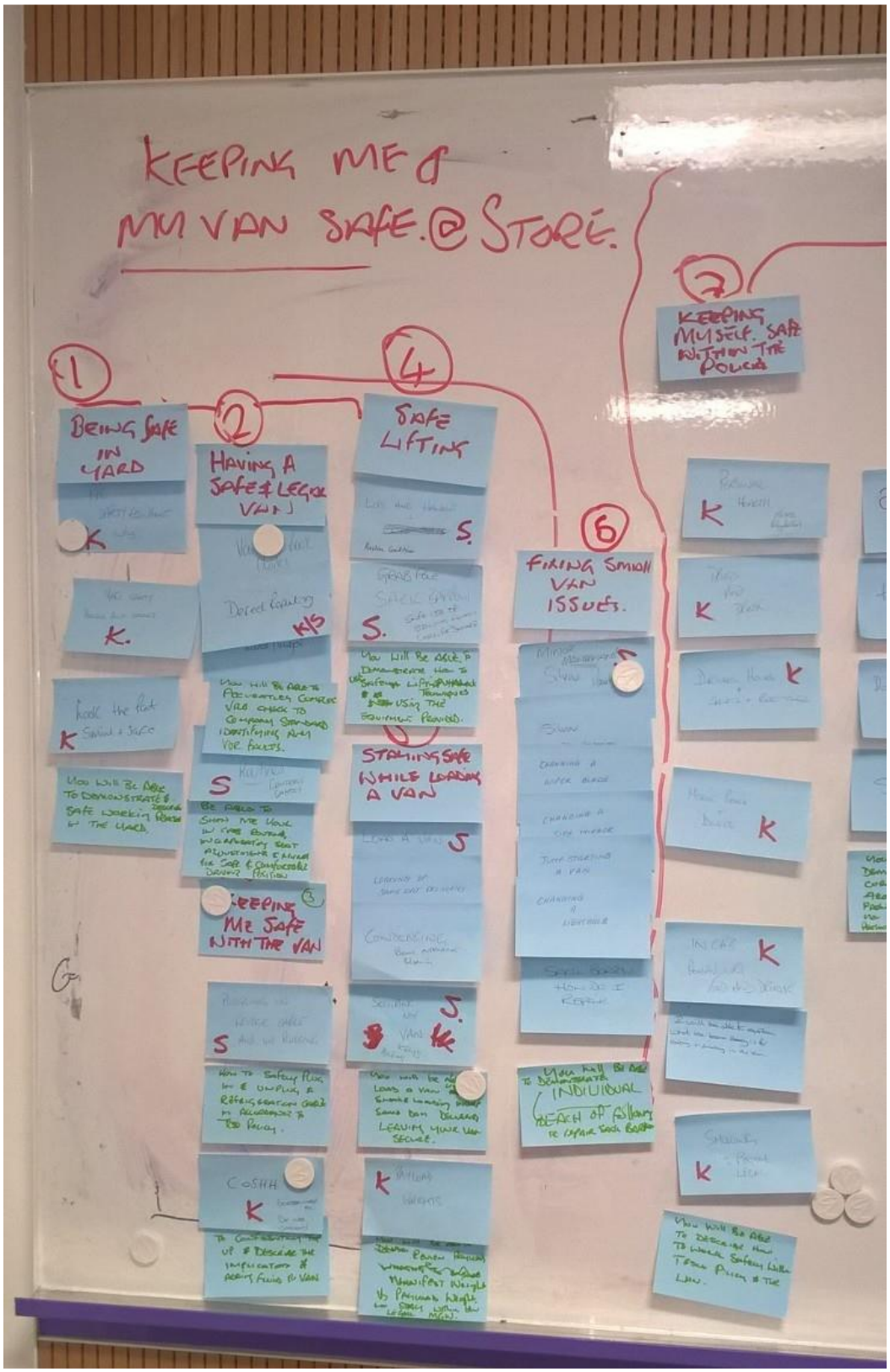
Andy

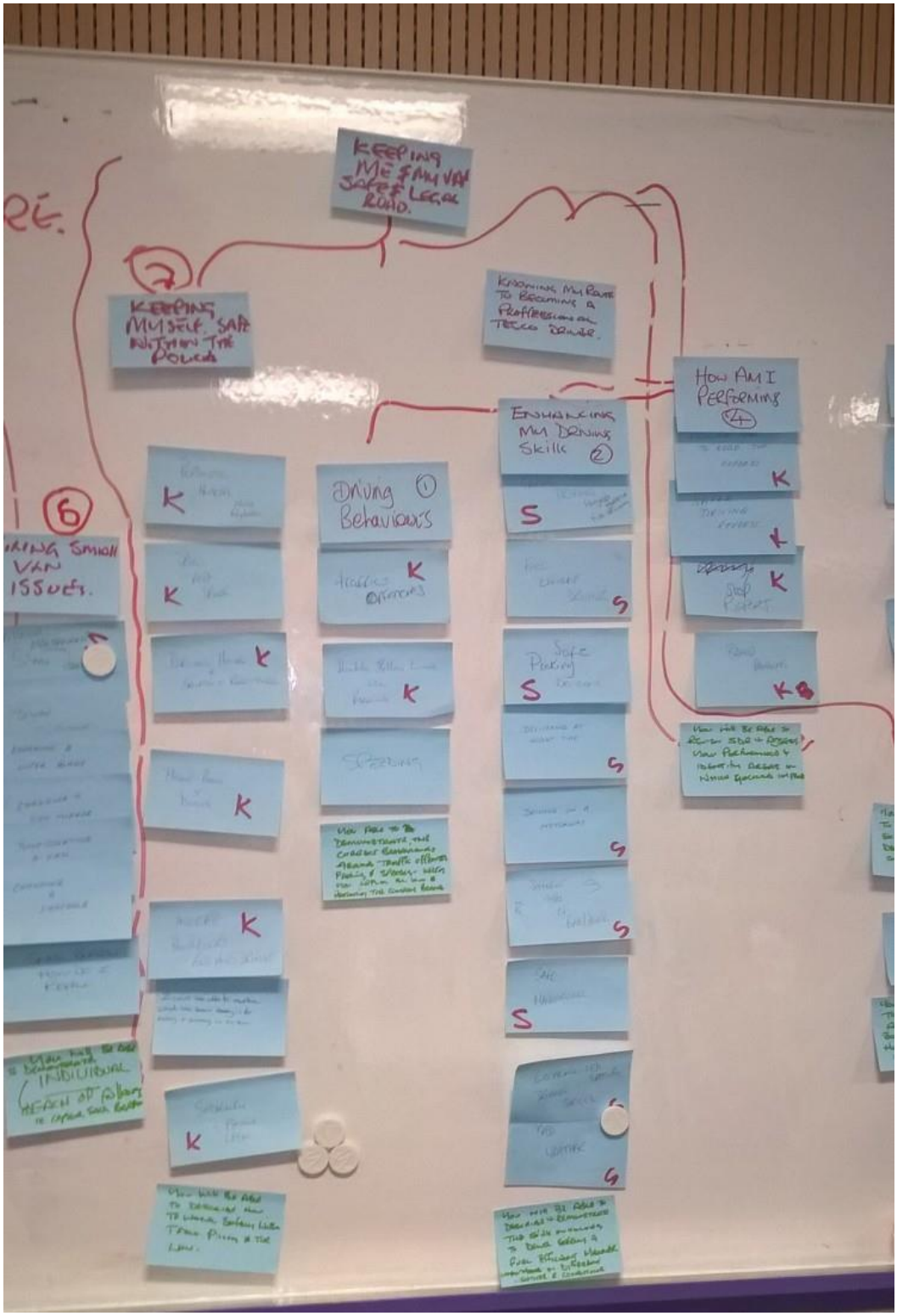
Appendix 5 – Questionnaire Statistics

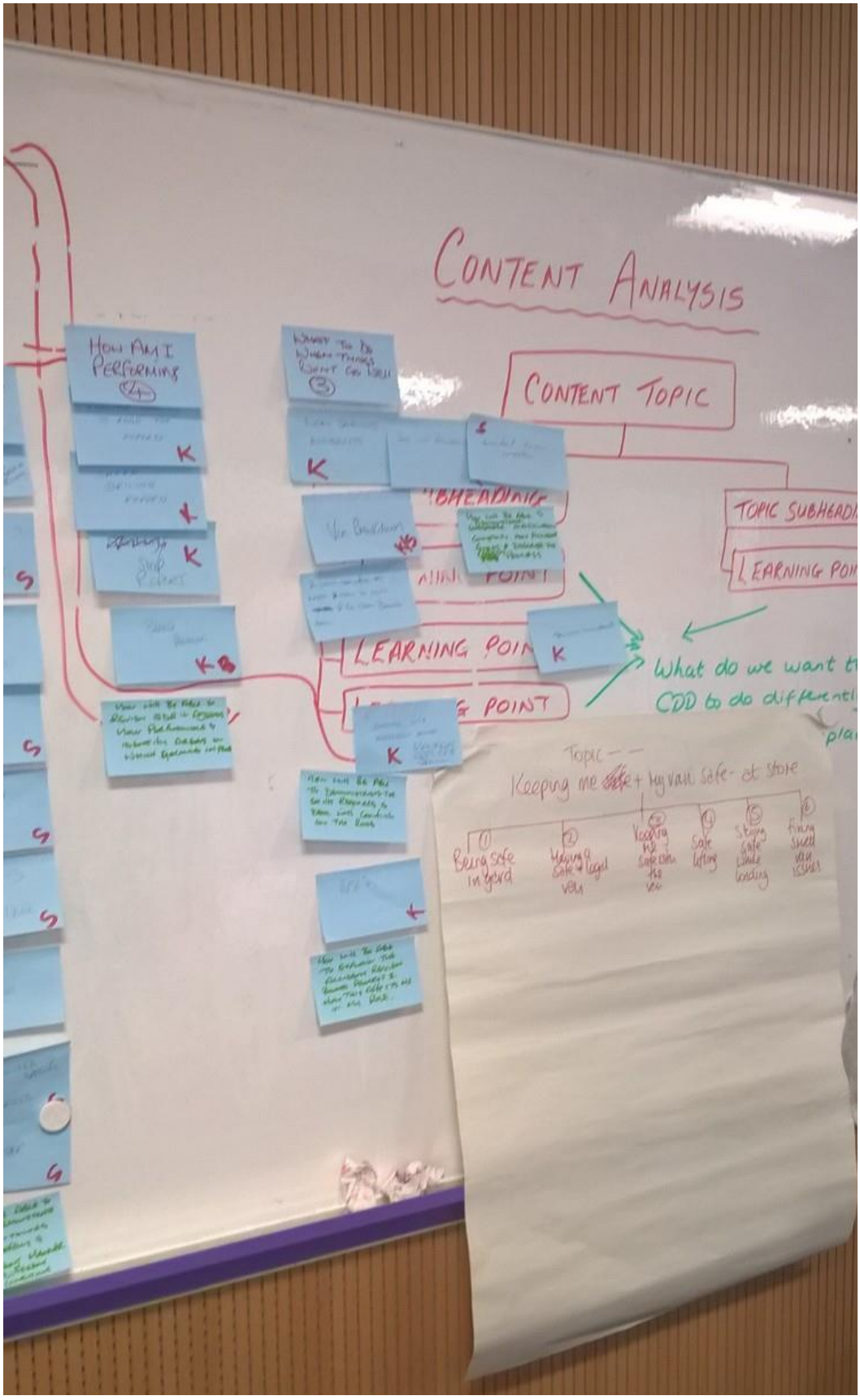


| Gender | | Age Group | How many years have you been a CUU | How many years have you been driving | How Many Accidents have you had while working for Ineos | Do you wear a seat belt | Do you ever break the speed limit , if so by how much | | | | | | Has your Driving Changed since you started driving for Ineos | | | | | Has your driving improved since driving for Ineos | | | | | Has your driving got worse since driving for Ineos | | | | | If you have ARB training, has it improved your driving | | | | | Does Ineos give you enough training and support to help you become a better driver | | | | | Would you say that you take make when driving a Ineos van | | | | | Does the safer driving report help you to improve your driving | | | | | Do you think tracking driver behaviour helps improve road safety | | | | | How concerned are you that you could be injured whilst driving a Ineos Van | | | | | I enjoy my job | | | | |
|---|---|---

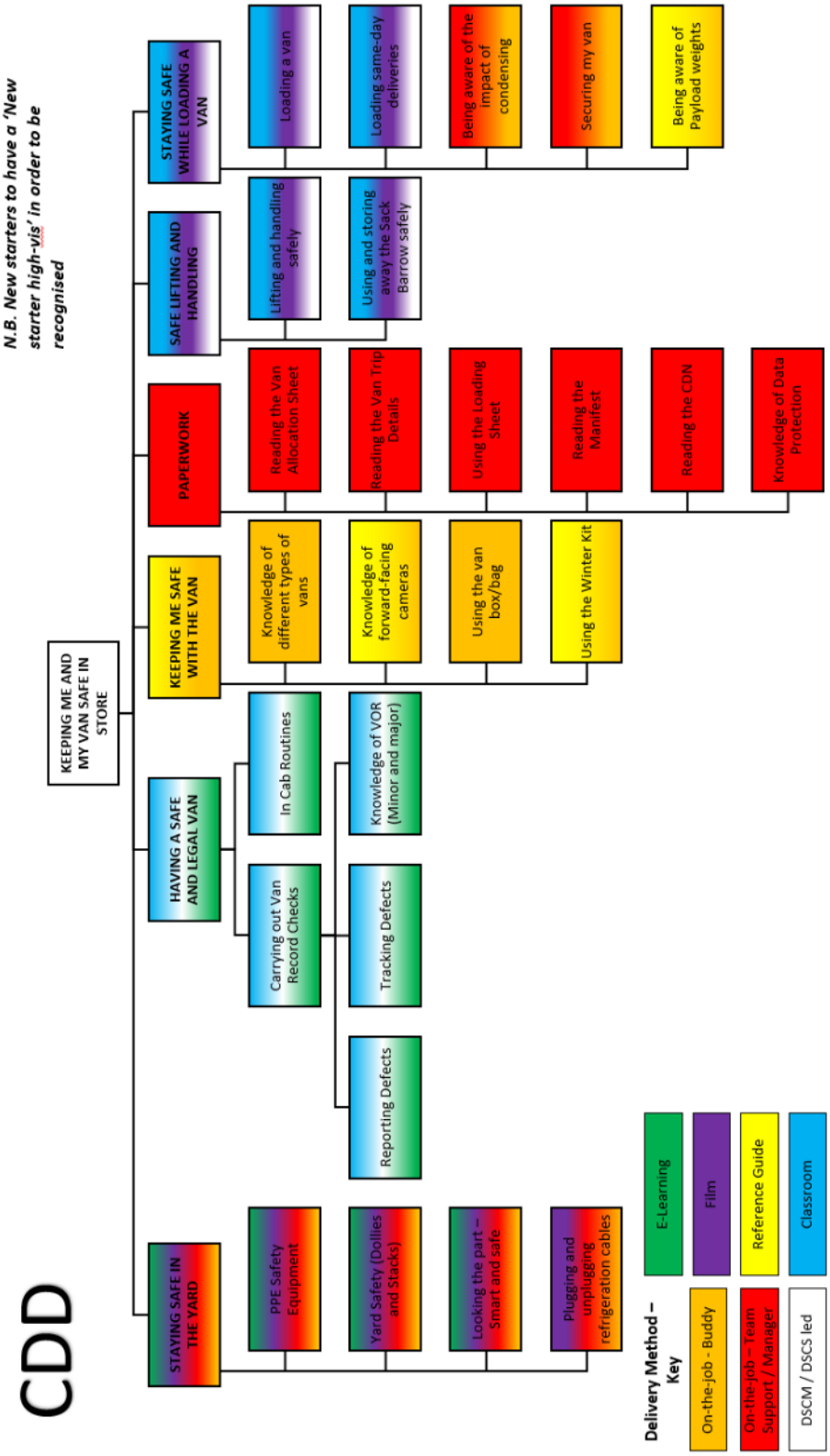
Appendix 6 – Learning Needs Analysis

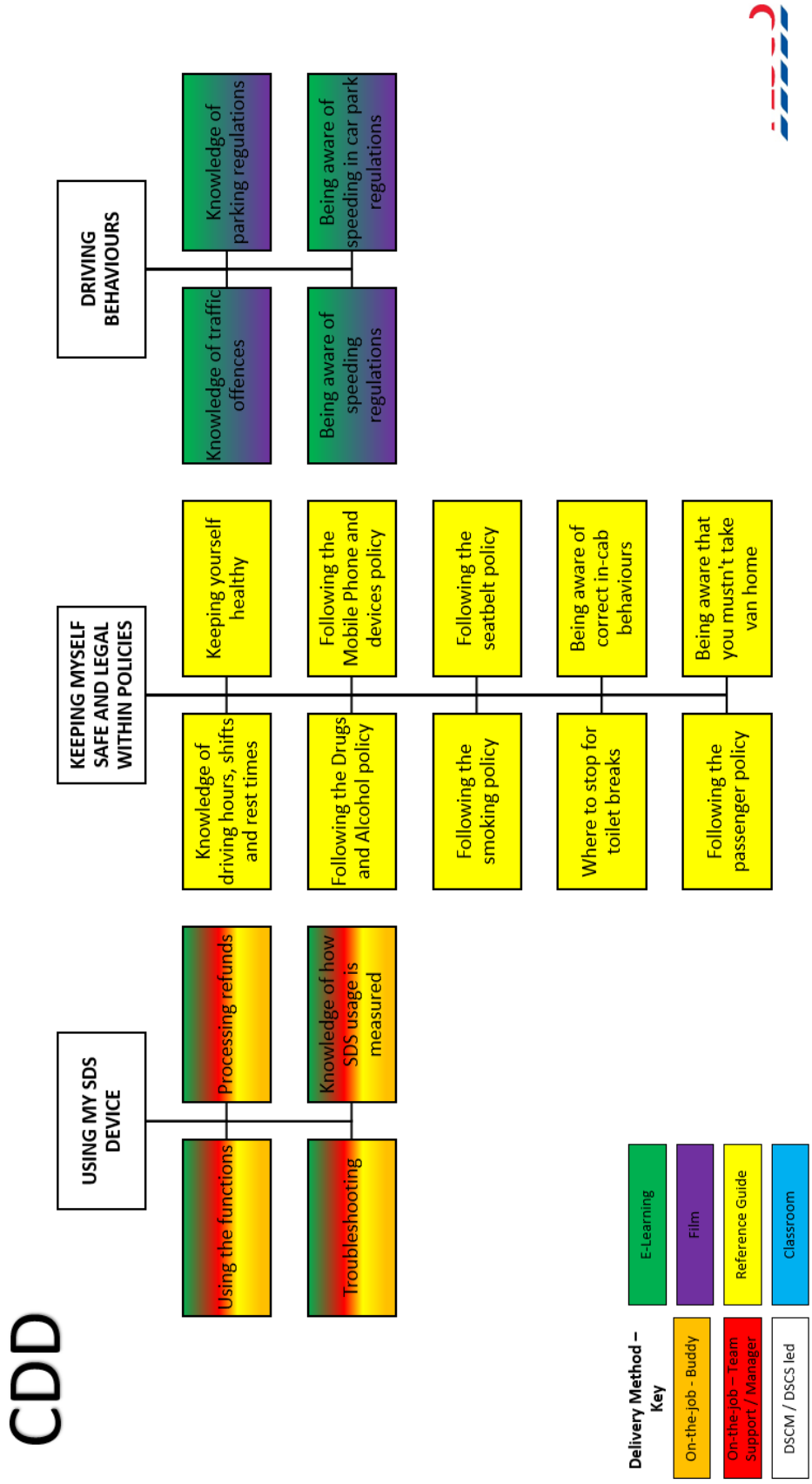


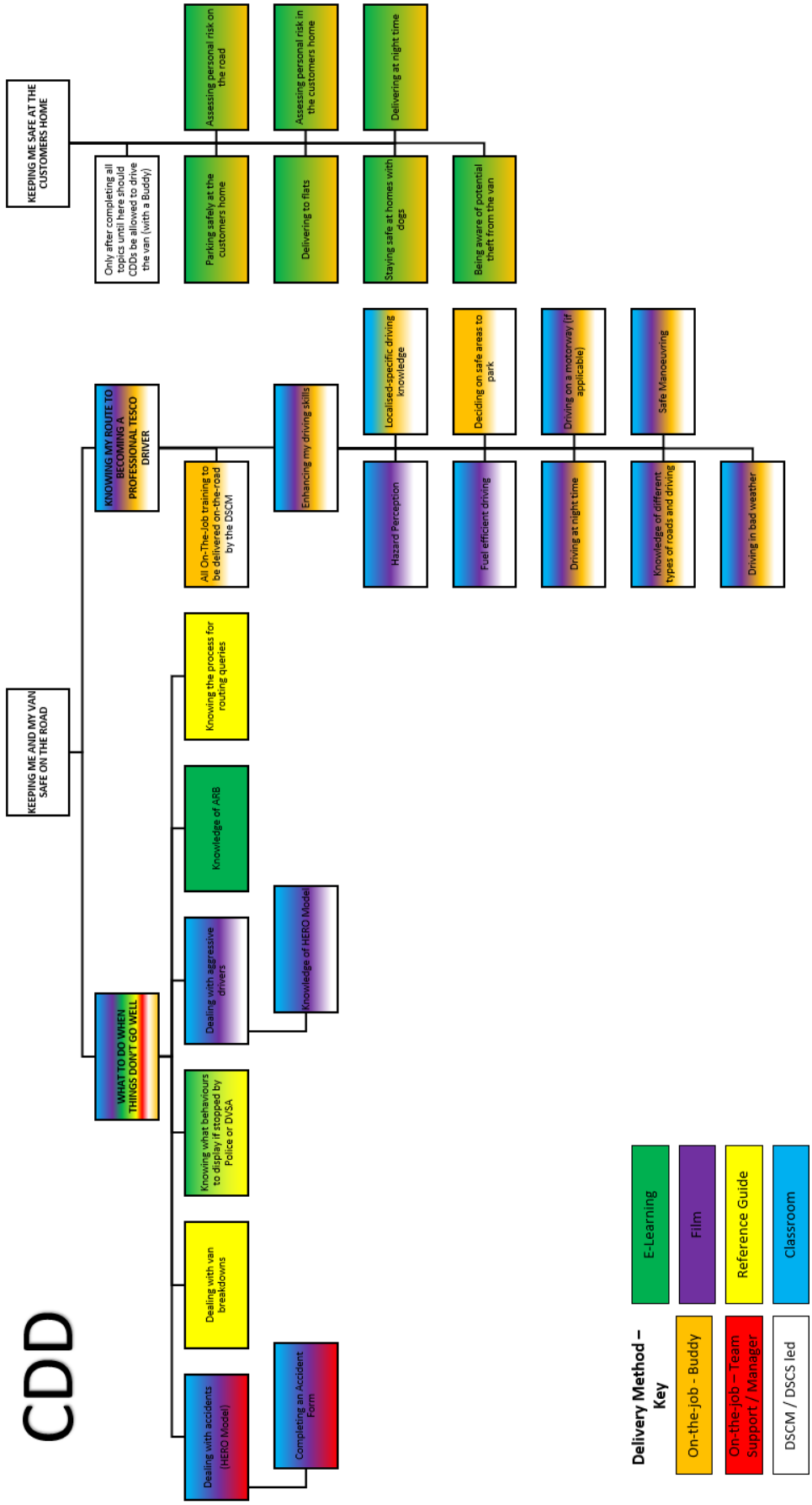

KEEPING ME & MY VAN SAFE & LEGAL ROUND.
KEEPING MYSELF SAFE WHEN THE POLICE
KNOWING MY ROUTE TO BECOMING A PROFFESIONAL TESCO DRIVER
HOW AM I PERFORMING
ENHANCING MY DRIVING SKILLS
DRIVING BEHAVIOURS
SAFE PARKING
6
K
S


CONTENT ANALYSIS
CONTENT TOPIC
HOW AM I PERFORMING
LEARNING POINT
What do we want t
CDD to do differentl
Topic —
Keeping me + my van safe- at store
Being safe in yard
Staying safe while loading

Appendix 7 – Learning Needs Analysis Version 4




CDD
USING MY SDS DEVICE
Using the functions
Processing refunds
Troubleshooting
Knowledge of how SDS usage is measured
KEEPING MYSELF SAFE AND LEGAL WITHIN POLICIES
Knowledge of driving hours, shifts and rest times
Keeping yourself healthy
Following the Drugs and Alcohol policy
Following the Mobile Phone and devices policy
Following the smoking policy
Following the seatbelt policy
Where to stop for toilet breaks
Being aware of correct in-cab behaviours
Following the passenger policy
Being aware that you mustn't take van home
DRIVING BEHAVIOURS
Knowledge of traffic offences
Knowledge of parking regulations
Being aware of speeding regulations
Being aware of speeding in car park regulations
Delivery Method – Key
On-the-job - Buddy
On-the-job – Team Support / Manager
DSCM / DSCS led
E-Learning
Film
Reference Guide
Classroom


CDD
KEEPING ME AND MY VAN SAFE ON THE ROAD
WHAT TO DO WHEN THINGS DON'T GO WELL
Dealing with accidents (HERO Model)
Completing an Accident Form
Dealing with van breakdowns
Knowing what behaviours to display if stopped by Police or DVSA
Dealing with aggressive drivers
Knowledge of HERO Model
Knowledge of ARB
Knowing the process for routing queries
KNOWING MY ROUTE TO BECOMING A PROFESSIONAL TESCO DRIVER
All On-The-Job training to be delivered on-the-road by the DSCM
Enhancing my driving skills
Hazard Perception
Fuel efficient driving
Driving at night time
Knowledge of different types of roads and driving
Driving in bad weather
Localised-specific driving knowledge
Deciding on safe areas to park
Driving on a motorway (if applicable)
Safe Manoeuvring
KEEPING ME SAFE AT THE CUSTOMERS HOME
Only after completing all topics until here should CDDs be allowed to drive the van (with a Buddy)
Parking safely at the customers home
Delivering to flats
Staying safe at homes with dogs
Being aware of potential theft from the van
Assessing personal risk on the road
Assessing personal risk in the customers home
Delivering at night time
Delivery Method – Key
On-the-job - Buddy
On-the-job – Team Support / Manager
DSCM / DSCS led
E-Learning
Film
Reference Guide
Classroom

Appendix 8 – Driving for Better Business

Driving for Better Business

DRAFT

Every day of the year across Britain some 150 vehicles driven on company business are involved in serious crashes, even more are involved in less serious incidents but ones which incur a cost to business. Every year there are 14,000 road deaths and serious injuries involving people at work. Business pays for this. Despite attempts by government to lessen the regulatory burden on businesses Health and Safety in the workplace remains a concern of all good businesses.

Tesco.com is a leader in developing management systems to reduce the collision risk of its drivers and is a champion of the Driving for better Business campaign, a government-backed initiative to raise awareness of the importance of work-related road safety in the business community and public sector by using advocates drawn from these communities to promote the business benefits of managing it effectively.

Tesco.com is one of a small number of companies which are prepared to showcase what they do to reduce risk by working with other companies and sharing their experiences of how to manage those who drive for work. A key aspect of their story is that collisions have reduced but the business has benefited in many other ways including a reduction in cost and a much happier workforce.

The Tesco.com programme has been led by Andrew Kemp who has also represented his company at many public events including seminars, workshops and international events where his procedures and practices have been presented as good practice.

Appendix 9 – STOP Audit Report

5231 STOP Audit Report

Date Range Selected : 01/01/2018 00:00:00 To 12/02/2018 23:59:59

Selected Group: 6647

CDA Trainer Group	Store	Date	CDA	Vehicle Reg	Exception Type	Event Detail	Location	Status	Signed By	Signed Date
[redacted]	6647	07/02/2018 07:57:44	2770	BT65TWJ	Speed Limit Exceeded	Speed 52.63 mph, speed limit 40 mph	Leves Road Chelwood Gate Haywards Heath RH17 7 GBR (51.0579096 0.0187731)	Managed	[redacted]	09/02/2018 05:00:58
[redacted]	6647	04/02/2018 20:53:53	Unknown	BD62CFO	Speed Limit Exceeded	Speed 39.01 mph, speed limit 30 mph	Selsfield Road West Hoathly East Grinstead RH19 4 GBR (51.0818 -0.058507)	Managed	[redacted]	07/02/2018 01:00:38
[redacted]	6647	04/02/2018 20:42:17	3177	BD62RSZ	Speed Limit Exceeded	Speed 40.48 mph, speed limit 30 mph	Brighton Road Horley RH6 7 GBR (51.17896, -0.165046)	Managed	[redacted]	07/02/2018 01:01:07
[redacted]	6647	04/02/2018 11:17:47	Unknown	BD62CFF	Speed Limit Exceeded	Speed 39.29 mph, speed limit 30 mph	Guildford Road Westcott Dorking RH4 3 GBR (51.22683, -0.3564636)	Managed	[redacted]	06/02/2018 05:40:01
[redacted]	6647	04/02/2018 07:39:41	Unknown	BD62CFO	Speed Limit Exceeded	Speed 39.47 mph, speed limit 30 mph	Millbrook Hill Nutley Uckfield TN22 3 GBR (51.03646, 0.0553416)	Managed	[redacted]	07/02/2018 01:03:00
[redacted]	6647	28/01/2018 10:26:47	Unknown	BD62CFU	Speed Limit Exceeded	Speed 39.31 mph, speed limit 30 mph	Northlands Avenue Haywards Heath RH16 3 GBR (50.99491, -0.0841028)	Managed	[redacted]	11/02/2018 16:20:47
[redacted]	6647	27/01/2018 11:04:06	Unknown	BD62CFM	Speed Limit Exceeded	Speed 40.48 mph, speed limit 30 mph	Millbrook Hill Nutley Uckfield TN22 3 GBR (51.03679, 0.0554873)	Managed	[redacted]	04/02/2018 09:14:53
[redacted]	6647	27/01/2018 09:25:44	Unknown	BJ62SPZ	Speed Limit Exceeded	Speed 46.02 mph, speed limit 30 mph	Westerham Road Chipstead Sevenoaks TN13 2 GBR (51.2805, 0.1515933)	Managed	[redacted]	04/02/2018 09:15:30
[redacted]	6647	24/01/2018 09:52:09	Unknown	BW15VDK	Speed Limit Exceeded	Speed 41.07 mph, speed limit 30 mph	Cockshot Hill South Park Reigate RH2 8 GBR (51.2290609, -0.2026205)	Managed	[redacted]	07/02/2018 01:21:15
[redacted]	6647	24/01/2018 09:15:08	Unknown	BJ62YDK	Speed Limit Exceeded	Speed 39.69 mph, speed limit 30 mph	Millbrook Hill Nutley Uckfield TN22 3 GBR (51.03641, 0.0555451)	Managed	[redacted]	04/02/2018 11:04:44
[redacted]	6647	22/01/2018 21:07:21	2956	BJ62SSV	Speed Limit Exceeded	Speed 39.37 mph, speed limit 30 mph	Flint Hill Dorking RH4 2 GBR (51.21635, -0.3283454)	Managed	[redacted]	04/02/2018 11:03:32
[redacted]	6647	17/01/2018 20:50:30	1397	bn62owp	Speed Limit Exceeded	Speed 46.61 mph, speed limit 30 mph	Hydehurst Lane Crawley England RH11 0 9 GBR (51.13694, -0.1830719)	Managed	[redacted]	30/01/2018 14:30:32

Appendix 10 – Group ARB Update

Accident Review Board Report

Heard this week	9
Training Outstanding	60
Sent Back	1
Not Reported	21
Filtered	0
Exceptions	1
Traffic Offences O/S	6

This form is to be updated and sent to grocery.operations@in.tesco.com by 12:00 noon on Thursday in order to be updated in that week's tracker.

Week No	201750
DSCM	

This Weeks Heard On ARB - Incidents heard on this weeks ARB, outcome, and training required.

Store Number	Store Name	ARB Week	Quick Number	CDD	VRN	Incident Date	Incident Description	Outcome	Grade: 5 -High & 1-Low	Specified Training based on ARB Call	Update - Training Actioned	Grading UID
5999	Croydon Dotcom Ce	201750	2057240	mariusz pludowski	BC16UDJ	02-Feb-18	at road works chiping street takes place stretham high road lane one way road i was travelling on the right side of the road lane 3 with minamul speed around 2~3mph i was hit by third party driver as he was trying to cahnge lane from 2 no 3 he stopped on tesco van step side side step not damaged it his car mirror front wing offside front bumper are damaged.	Non Preventable	NG			1629
5999	Croydon Dotcom Ce	201750	2057239	Joshua Graham Turner	BL66MTV	31-Jan-18	THE THIRD PARTY VEHICLE COLLIDED WITH MY VEHICLES WING MIRROR. UNSURE OF THE STREET NAME IN THORNTON HEATH HOWEVER THE THIRD PARTY VEHICLE TRAVELLING IN THE OPPOSITE DIRECTION SWERVED TOWARDS MY VEHICLE COLLIDED WITH THE MIRROR AND DID NOT STOP TO EXCHANGE DETAILS.	Non Preventable	NG			1629
5999	Croydon Dotcom Ce	201750	2057238	delroy miller	BV66ARO	01-Feb-18	the wind blew open the door resulting the passenger door unable to shut.	Non Preventable	NG			1629
6647	Crawley Dotcom Ce	201750	2057269	Regan Burree	BD62FDL	05-Feb-18	Was pulling out of the A23 to go round roundabout towards balcombe as i pulled away i felt another vechile hit the back of the van i stopped got out and assed the damage spoke to the other driver a police officer surgested we go to pease pottage services to swap details as no one was hurt. when i reported the accident i wasn't sure which road i was on and told collision line i was on the A264 i later realised i was on the A23.	Non Preventable	NG			1634
5999	Croydon Dotcom Ce	201750	2057241	Michelle Notaro	BC16UDG	04-Feb-18	After completing my c/c trip I started to reverse out of the desienated bay. Third	Preventable	2	,		

Appendix 11 – CDA Performance Report (Combined)

141 CDA Performance Report (COMBINED)

Report Number 141, Version v2.3

Selected Driver Group: 2812

16/01/2018 - 12/02/2018

SELECT A DRIVER FOR DETAILS	TOTAL RATING	RATING VALUE	ACCEL SENSE	OVER REVVING	GREEN BAND DRIVING	HARSH ACCEL	HARSH BRAKING	HARSH CORNERING	EXCESSIVE OVERSPEED	SPEEDING	MPG	TOTAL DISTANCE	TOTAL ENGINE RUN
GROUP AVERAGE	B	2.04	A	D	B	C	D	D	A	A	24.89	3395.67	263:30:22
[redacted]	A	1.00	A	A	A	A	A	A	A	A	17.03	13.86	02:29:52
	A	1.38	A	A	B	A	C	A	A	A	28.72	212.26	16:12:58
	A	1.38	A	A	B	A	A	C	A	A	26.52	184.92	15:36:00
	B	1.63	A	A	B	A	E	A	A	A	24.16	26.04	02:13:42
	B	1.75	A	A	B	C	A	D	A	A	29.78	67.48	03:54:00
	B	1.88	A	A	A	A	F	C	A	A	29.74	240.10	12:42:05
	B	1.88	A	A	C	A	F	A	A	A	25.05	33.62	02:30:41
	B	2.00	A	A	C	A	A	G	A	A	29.12	24.98	01:24:30
	B	2.00	A	C	C	A	C	C	A	A	19.85	243.21	19:14:35
	B	2.13	B	A	C	A	D	D	A	A	23.72	261.97	19:50:05
	B	2.25	A	D	C	C	C	B	A	A	25.81	526.92	42:25:15
	B	2.25	A	A	C	C	C	E	A	A	22.44	151.06	16:52:38
	B	2.38	A	E	B	C	C	C	A	A	25.39	294.90	24:11:41

Run Date 13/02/2018 14:45:32

141 CDA Performance Report v2.4

Page 1 of 2

Appendix 12 – Duty of Care (The Law)

Section 2: Duty of Care to Staff

It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, and safety and welfare at work of all his employees. *(Health & Safety at Work Act 1974 section 2)*

Without prejudice to the generality of an employer's duty under the preceding subsection, the matters to which that duty extends include in particular:

The provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health; (Health & Safety at Work Act 1974 section 2a,c)

To comply with section two of the act I was instrumental in creating the following processes to comply fully with the stipulations contained:

- Each driver is carried out a practical driving assessment of capability and competence.
- Is accompanied by a minimum of 5 shifts of Buddy training with an experienced driver to assess capability.
- Attends a Bronze day to assess understanding and capability.
- Accident Review Board.
- The action is taken is shown on the Contextual Speeding report.
- The action is taken is shown on the Safer Driving Report.

Arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances; (Health & Safety at Work Act 1974 section 2b).

A great deal of work has been carried out to assure that our drivers are protected as far as practicable regarding lifting and handling. I am confident that the policies and processes that I have helped introduce have greatly protected our drivers from harm.

On studying the impact of the legislation our drivers have benefited from:

- Each green tray (tote) is limited to a maximum weight of 15Kg.
- Each wine (Blue tote) is limited to a maximum of 18kg and can only be loaded at floor level of the van storage area.
- A retractable step has been provided to assist in reaching high-level totes.
- A van is snake loaded starting at the rear left of the van and progressing right then back to left (Snakes and ladders) to minimise the centre of gravity of the van to increase van stability.
- To underpin the implementation of good safe practice we have introduced "Pristine Handling" for our drivers. The methodology of pristine handling stems from Olympic weightlifting principles and had had a proven track record with our partners in distribution.
- Grab pole and sack barrow to be used in conjunction with Pristine Handling.

The provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work. (Health & Safety at Work Act 1974 section 2e).

Extensive research and development have been carried out to create as safe a working environment as possible for our outreach workers.

- The provision of appropriate Personal Protection Equipment (PPE), Drivers uniform for all weathers, with high visibility incorporated.
- Safety boots/shoes.
- No driver is out on the road longer than six hours before returning to store for a rest break and food.
- Delivery routes are constructed to eliminate the need to speed and adequate time for all variably sized deliveries is provided.
- Loading areas and yards have strict safety protocols applied.

(3) Except in such cases as may be prescribed, it shall be the duty of every employer to prepare and as often as may be appropriate revise a written statement of his general policy with respect to the health and safety at work of his employees and the organisation and arrangements for the time being in force for carrying out that policy, and to bring the statement and any revision of it to the notice of all of his employees. *(Health & Safety at Work Act 1974 section 2/3).*

(4) Regulations made by the Secretary of State may provide for the appointment in prescribed cases by recognised trade unions (within the meaning of the regulations) of safety representatives from amongst the employees, and those representatives shall represent the employees in consultations with the employers under subsection (6) below and shall have such other functions as may be prescribed. *(Health & Safety at Work Act 1974 section 2/4).*

Section 3 General Duties of Employers and Self-employed to Persons other than their Employees.

It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety. (Health & Safety at Work Act 1974 section 3).

It shall be the duty of every self-employed person who conducts an undertaking of a prescribed description to conduct the undertaking in such a way as to ensure, so far as is reasonably practicable, that he and other persons (not being his employees) who may be affected thereby are not thereby exposed to risks to their health or safety. (Health & Safety at Work Act 1974 section 3).

There are only six sites where agency drivers are employed compared with the 330 sites where all drivers are Tesco employees. At these sites, the agency drivers are provided with the same working conditions and structures as employed Tesco staff, all of which are covered by the above and below text regarding the 1974 H&S at work act.

Section 7 General Duties of Employees at Work.

It shall be the duty of every employee while at work—

(a)to take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and (Health & Safety at Work Act 1974 section 7).

(b)as regards any duty or requirement imposed on his employer or any other person by or under any of the relevant statutory provisions, to co-operate with him so far as is necessary to enable that duty or requirement to be performed or complied with. (Health & Safety at Work Act 1974 section 7).

A constant concern of the Company is the adhering to GB Domestic Driving Hours
A driver is only allowed to work/be employed as a driver for 11 hours in any given 24-hour period. *(GB domestic driving hour's page 26)*

This fact means that we are reliant on our staff informing us if they are employed as, or undertake any other driving activity outside of Tesco as this may make it an offence to employ them on the timelines required by the operation.

Section 37 Offences by Bodies Corporate.

Where an offence under any of the relevant statutory provisions committed by a body corporate is proved to have been committed with the consent or connivance of, or to have been attributable to any neglect on the part of, any director, manager, secretary or other similar officer of the body corporate or a person who was purporting to act in any such capacity, he as well as the body corporate shall be guilty of that offence and shall be liable to be proceeded against and punished accordingly. (Health & Safety at Work Act 1974 section 37).

Where the affairs of a body corporate are managed by its members, the preceding subsection shall apply in relation to the acts and defaults of a member in connection with his functions of management as if he were a director of the body corporate. (Health & Safety at Work Act 1974 section 37).

We work tirelessly with our management teams to make them aware of the importance of keeping in scope regarding the operational framework of Dotcom.

Appendix 13 – Proposal for CDA Assessment Process 2015

Proposal For CDA Assessment Process 2015

BUSINESS NEED

Working Smarter - 29% increase in volume of assessment per day

At Present

The existing assessment was designed with the approach of select the best as this was perfectly feasible between 2005 and 2011, since then an ever increasingly large areas of the country this is now not the case. The pool of drivers that we sourced our drivers from has diminished and the number of organisations recruiting from that pool has grown at an expediential rate.

The existing format is based on one assessment per hour and each lasting the full hour. This works well if all candidates attend and the day is fully booked by the store or CFCs. However, this is often not the case and leads to situations when a bad fail is followed by a no show which can result in one hour 45 minutes of unproductive time.

In a drive to work more efficiently, assessments should now follow the new 2015 format as closely as possible.

This change in the assessment process fits in neatly with how the support team provides contextual speeding and will provide ARB training going forward. In no way is this process designed to diminish the role of the ADI/Fleet qualified Driver Safety and Compliance Manager (DSCM).

The new process will still have a minimal impact to the stores operation, as the assessor will be able to provide tea and coffee to candidates who are waiting.

The result is designed to give clarity in the responsibilities of both.

Assessors (DSCS)

Assessors assess, giving help and advice to drivers who require little development (Grade 4) or need to gain experience in a van that they may not have driven before but have fundamental good driving skills. The candidate is able to achieve the standard we require by being given advice/guidance or experience in driving the van.

This conducted alone with the two stages of contextual speeding and grade one and two for ARBs

Trainers (DSCM)

Trainers train, working with grade three's over half day/day training to achieve the standard we require as well as the high grade contextual speeding and ARBs

The change in process is designed to make the team more efficient as the population of drivers that it is responsible unremittingly towards 20,000 outreach workers.

Appendix 14 – Greenford Incident

Appendix 15 – High Level Meeting with Royal Mail

Drivers Hours Regulations

Domestic driving limits Driving is defined as being at the controls of a vehicle for the purposes of controlling its movement, whether it is moving or stationary with the engine running, even for a short period of time.

Daily Driving

In any working day, the maximum amount of driving permitted is 10 hours. The daily driving limit applies to driving on and off the public road. Off-road driving for the purposes of agriculture, quarrying, forestry, building work or civil engineering counts as a duty rather than driving time.

Day: The day is the 24-hour period beginning with the start of duty time.

Daily Duty

In any working day, the maximum amount of duty permitted is 11 hours. A driver is exempt from the daily duty limit (11 hours) on any working day when he does not drive.

A driver who does not drive for more than 4 hours on each day of the week is exempt from the daily duty limit.

Duty: In the case of an employee driver, this means being on duty (whether driving or otherwise) for anyone who employs him as a driver. This includes all periods of work and driving but does not include rest or breaks. Employers should also remember that they have additional obligations to ensure that drivers receive adequate rest under health and safety legislation.

For owner drivers, this means driving a vehicle connected with their business or doing any other work connected with the vehicle and its load.

The definition of an employed driver fundamentally means that if you are paid as a driver domestic driving hour rules apply to you. That creates an opportunity for poor management within a retail environment as Dotcom drivers make up a very small percentage of staff in a normal Tesco supermarket.

This problem is compounded more when part-time and evening drivers are employed for a four-hour shift. By definition we have made them subject to GBDDH so they cannot work for longer than 11 hours in any given 24 hour period, not relating to calendar days.

Acts of Parliament

Management of Health & Safety at Work Regs 1999
Corporate Manslaughter, Corporate Killing Act 2007

Health & Safety at Work Act 1974

Although the 1974 act is thorough and in-depth the main sections that affect Dotcom are General duties of employers to their employees. *Health & Safety at Work Act 1974*:

- Section 2: Duty of Care to Staff
- Section 3: Duty of Care to Others

Appendix 16 – New CDA Assessment Process

CDA Assessment Process 2015

Operational

New Assessment

The objectives of the changes are to make more use of the Driver Safety and Compliance support (Assessor) time and work more closely with Driver Safety and Compliance manager (Trainer).

How This Will Be Structured

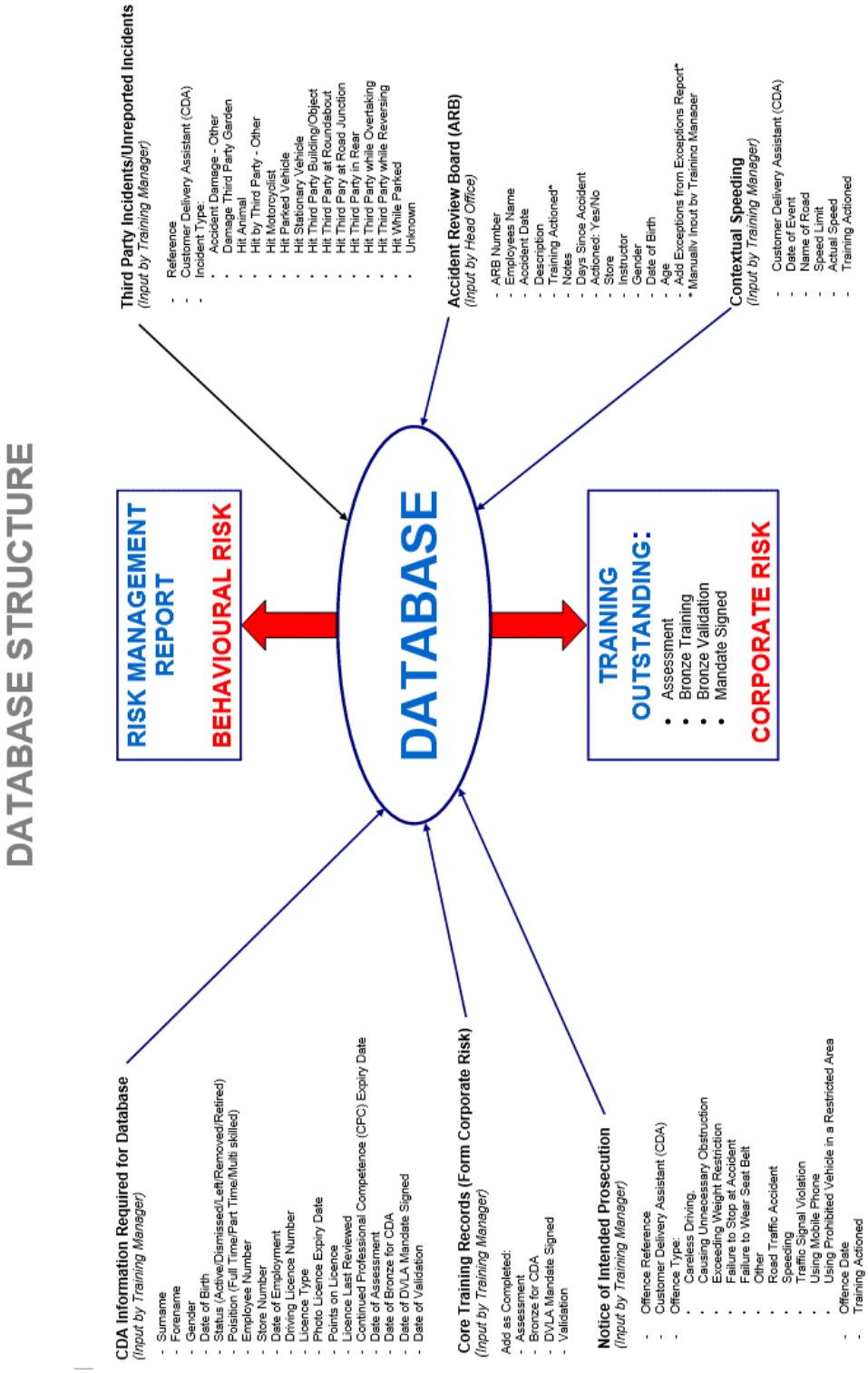
Existing Assessment Times

Old timings format would provide the business with 7 assessment slots each lasting 1 hour.

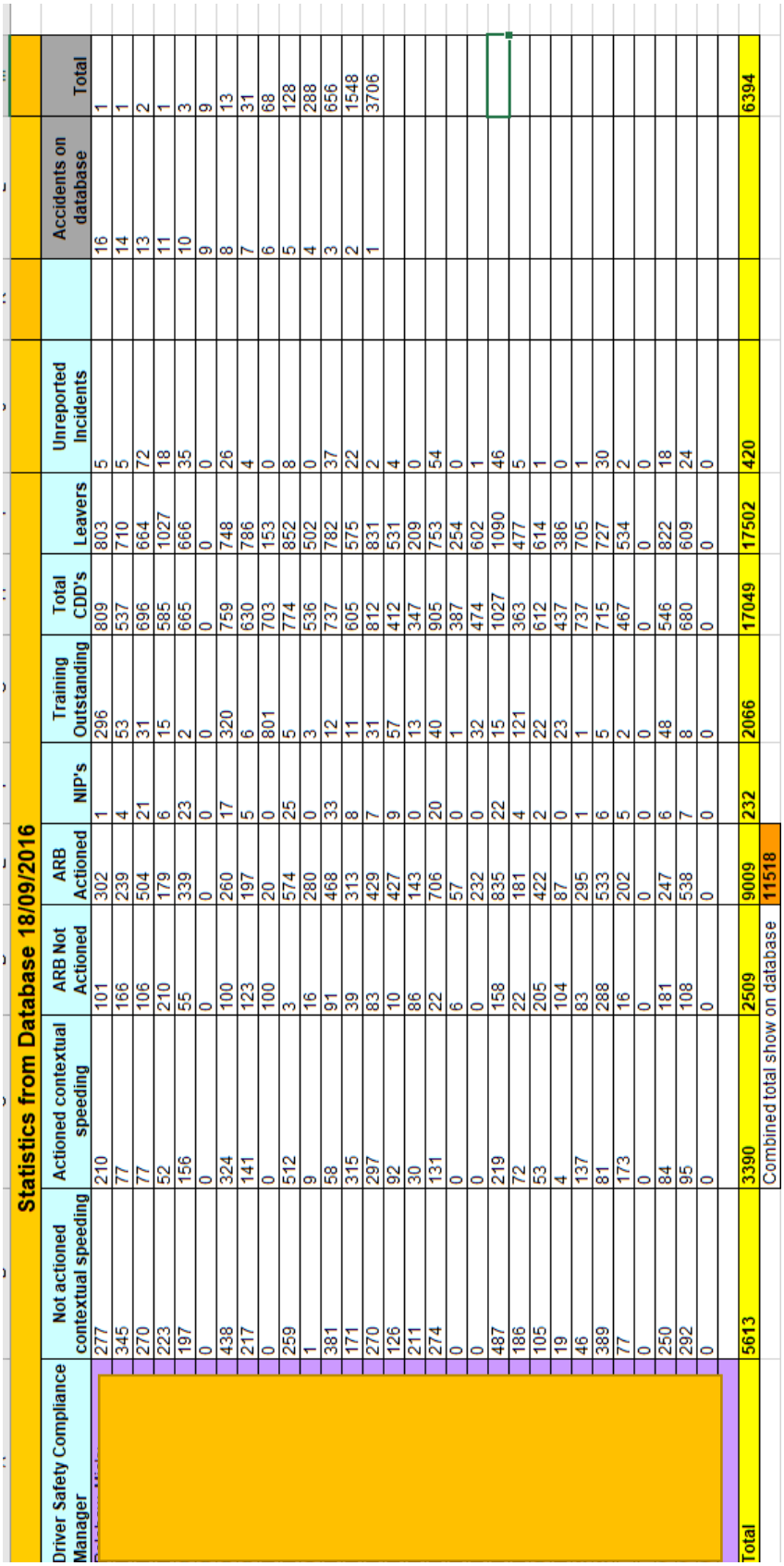
08.00	To	10.00	X2
10.00	To	12.00	X2
12.00	To	13.00	Lunch
13.00	To	15.00	X2
15.00	To	16.00	X1
			Total 7 Assessments

TESCO Academy tesco.com

Appendix 17 – Database Structure



Appendix 18 – Database Statistics



Statistics from Database 18/09/2016

Driver Safety Compliance Manager	Not actioned contextual speeding	Actioned contextual speeding	ARB Not Actioned	ARB Actioned	NIP's	Training Outstanding	Total CDD's	Leavers	Unreported Incidents		Accidents on database	Total
	277	210	101	302	1	296	809	803	5		16	1
	345	77	166	239	4	53	537	710	5		14	1
	270	77	106	504	21	31	696	664	72		13	2
	223	52	210	179	6	15	585	1027	18		11	1
	197	156	55	339	23	2	665	666	35		10	3
	0	0	0	0	0	0	0	0	0		9	9
	438	324	100	260	17	320	759	748	26		8	13
	217	141	123	197	5	6	630	786	4		7	31
	0	0	100	20	0	801	703	153	0		6	68
	259	512	3	574	25	5	774	852	8		5	128
	1	9	16	280	0	3	536	502	0		4	288
	381	58	91	468	33	12	737	782	37		3	656
	171	315	39	313	8	11	605	575	22		2	1548
	270	297	83	429	7	31	812	831	2		1	3706
	126	92	10	427	9	57	412	531	4			
	211	30	86	143	0	13	347	209	0			
	274	131	22	706	20	40	905	753	54			
	0	0	6	57	0	1	387	254	0			
	0	0	0	232	0	32	474	602	1			
	487	219	158	835	22	15	1027	1090	46			
	186	72	22	181	4	121	363	477	5			
	105	53	205	422	2	22	612	614	1			
	19	4	104	87	0	23	437	386	0			
	46	137	83	295	1	1	737	705	1			
	389	81	288	533	6	5	715	727	30			
	77	173	16	202	5	2	467	534	2			
	0	0	0	0	0	0	0	0	0			
	250	84	181	247	6	48	546	822	18			
	292	95	108	538	7	8	680	609	24			
	0	0	0	0	0	0	0	0	0			
Total	5613	3390	2509	9009	232	2066	17049	17502	420			6394

Combined total show on database 11518

Appendix 19 – The Key to Risk Database

KEY RISK REGISTER - DOTCOM - SEPTEMBER 2009

KEYS TO ASSESSMENTS

GROSS RISK = Likelihood x Impact

Likelihood Ratings (over the next five years)

5 = Highly probable
4 = More than likely
3 = Evens chance
2 = Less than likely
1 = Highly improbable

Impact ratings (over a one-year period)

5 = Catastrophic (> 20% EBIT *(indicative)* OR significant long term reputational impact)
4 = Substantial (> 10% EBIT *(indicative)* OR long term reputational impact)
3 = Significant (>5% EBIT *(indicative)* OR medium term reputational impact)
2 = Moderate (>2% EBIT *(indicative)* OR short term reputational impact)
1 = Minor (>1% EBIT *(indicative)* OR minor reputational impact)

Risk matrix (Likelihood x Impact)

H High risk
S Significant risk
M Medium risk

CONTROLLABILITY FACTORS

5 = The company can totally control this risk
4 = The company can largely control this risk or influence the environment
3 = The company is one of a number of entities that can control the risk or influence the environment
2 = The company can only marginally influence or effect control in this risk environment
1 = The company has no effective influence over the control of this risk

NET RISK FACTORS

Comfortable with residual risk
Not comfortable with residual risk but confident that planned actions will satisfactorily improve control
Not comfortable with residual risk and unlikely that we will be in foreseeable future

RISK GROUP (What's the size of this risk and can we control it?)	SUB-RISKS & CONTROLLABILITY (What risks are covered in this group and to what extent can we control them?)	2009 RISK MOVE (What has happened to the risk since Oct 2008?)	MANAGEMENT CONTROLS (Who and how do we control these risks?)	RECENT ASSURANCE ACTIVITIES (What evidence is there of recent work to support control effectiveness?)	NET RISK FEB 2009 (Are we comfortable with our risk position for this risk group?)	NEXT STEPS
1. Information Security	*(Champion: JJ Van Oosten)*				February 2009 Rating:	
Gross Risk factors Likelihood (L) = 3 Impact (I) = 4 = GROSS RISK H Overall Controllability 3	a. Customer data is not adequately protected from internal or external misuse - credit card details, e-mail addresses, etc.	3				
	b. Dotcom is not PCI compliant in line with government deadlines.	3	Increasing regulation/greater media attention			
	c. Risk of confidential data disclosure - important for corporate strategy and new business development.					

Appendix 20 – Future of CDA Database

FUTURE OF CDA DATABASE

FUNCTIONS

Training 'TO DO' List

- Target CDAs
- Target Stores

Management Tools

- Assessor Efficiencies
- Instructor Efficiencies

ADDITIONAL NEEDS

- Safer Driving Report (SDR) Score
- Accident Review Board (ARB) Grading
- Failed Assessment
- Date of Training (DOT)
- Customer Feedback
- How's My Driving?
- Human Resource Data (ROTA, Contracted Hours)

INTERFACE

- Web Based Access
- IPhone/Android App of Work Schedule PLUS marking as complete
- Automated Data Upload
- Trainers Marking Completed Training

Appendix 21 – Why was the Database Devised

Why was the database devised?

The leadership team of Tesco Dotcom commissioned the instillation of a database in 2010 as a response to the ever growing driver work force (then approximately 10,000 Customer Delivery Drivers (CDD)) and the need to differentiate between corporate risk and behavioural risk.

Corporate risk

Corporate risk is defined as the risk to the company if a driver had not received training or had not been on-boarded to the company without following due process.

Figure 1.0 below shows Tesco Dotcom recruitment process

Appendix 22 – CDA Risk Register Updates

Appendix 23 – Emails

From: Kemp, Andrew
Sent: 28 February 2014 15:36
To: [redacted]@Tesco.com>
Cc: [redacted]@Tesco.com>; [redacted]@Tesco.com>
Subject: CPC Training Enfield

Hi [redacted]

The first weeks training at Enfield has gone better than I expected.

8 attended Tuesday
9 attended Wednesday
8 attended Thursday

Non attendees are being reprogrammed in to attend by [redacted]

The training was generally well received and a positive atmosphere was kept throughout.
I will bring the feedback forms back to the office at the end of week four (Mod 1 completed)

The concerns that where expressed by the CDAs throughout all three days were:-

- No Permits to drive
- High Viz waistcoats seemed to have run out
- Customers being told that the delivery was running late when it wasn't
- Maps being kept in the van and not van pack have gone missing
- No torches in packs
- Poor van cleaning, external only not in the box
- Van cleaning sheet not filled out in Van Book
- Vans not checked back in at end of trip
- No Team 5
- Customer Services giving customers estimated delivery time from the manifest, not slot time (can this be done?)
- No Pullmans on site on a Sunday – very poor response time given.
- Van Record book not signed off on return from trip by anyone from the delivery

I am sure that you are aware of most or if not all of the above but we have made a commitment to the CDAs to feed back all of their concerns.

Thanks

Andy

[redacted]
Tesco Dotcom
Development Manager
Tesco
[redacted]
Aylesford
Kent
[redacted]

Mobile [redacted]
Mobex [redacted]

Appendix 24 – Thematic Coding

27/10/2014

This interview was conducted in Aylesford Dotcom Centre at 13pm to 15.00 pm

Q **How long have you worked for Tesco and what is your history so far?**

A I started in1995 over 20 years ago as a warehouse operative, price integrity, check out section manager, CDA, Dotcom Manager, Training Manager.

Q **How often do you use the data base?**

A I use the database sometimes three times a week and others once in two weeks.

Q **What are the strengths of the database?**

A I like the fact that you have all the details of your drivers in one place. I like the order of risk, but on the down side it is not accurate. The database is not live, it is out of date.

Q **How does the database help you in your job?**

A For me the only thing it does is to record information; I can go back and change information later. It is not as big a part of my job as it should be as it does not really tell me anything.

Q **What would you change on the database and why?**

A Foe me it needs to become more of a live device, so the information is fed centrally, whether it be accidents, speeding or whatever it needs. So all of its inputs should be living and be fed into the database as live data. This would make the database more of a live tool so it would show me immediately who risk was. I would like all what we do instantly up-loaded by tablet onto the database.

I would like the safer driving report added. This would predict risk as at the moment all we are doing is acting retrospectively.

Q **What would you change regarding what could come off the database to improve, it and why?**

A I would take way the validation process as this is now defunct and rarely happens.

Q **If you were in charge of the driver training team what would you change in relation to the database?**

A To me I just want it to be live and real, it's just like a big diary at the moment. It's hard to navigate and there is a lot of repartition. I think assessors should have access to it and I should be able to see what they have input to verify that the information is correct.

Q **What is the recruitment and training process for CDAs from your prospective?**

A The store does the interview, passed to us for assessment, back to the store they then come to us for Bronze training. Then they go to a buddy for up to two weeks.

Q **What would you change regarding the ARB process and how would this be beneficial to the database, so ultimately yourself?**

A I would want ARBs to become graded. The grades would then show on the risk register as potential risk rather than actual historical risk after the event.

Q **Should some Assessors be ADIs**

A Yes, because the bigger we are getting per driver population for each manager makes fulfilling the process is now impossible. This would also raise the profile of the assessor within the Company. Ultimately why would you not as we will be able to use the team as a whole more efficiently

Q **How should the Buddy system affect the database, at present and in the future if training were to be over two weeks?**

A I don't think it would make a change

Q **What is the main weakness in the database?**

A As I have described already it is not live.

Q **Do you think the validation process is relevant today?**

A No not really, it needs to be updated to be relevant.

Q **Would you change the assessment process, if so how.**

A No I don't think I would change it. However if the assessor was an ADI then this assessment could be changed to a development session, this would inevitably produce more successful outcomes in this process.

TRAINING
WEEK
LIVE
PROCESS
TRAINING

Citations

Ackroyd, S., Hughes, J.A. and Soothill, K. (1989) 'Public sector services and their management'. *Journal of Management Studies*, *26*(6), pp.603-619.

Adair, J.E. (2008) *The Best of John Adair on Leadership and Management*. London: Thorogood Publishing.

Adamczak, M., Domanski, R., Hadas, L. and Cyplik, P., (2016). 'The integration between production-logistics system and its task environment-chosen aspects'. *IFAC-PapersOnLine*, *49*(12), pp.656-661.

Alaiakbari, M. and Moridpour, S., (2017) 'Managing Heavy Vehicle Drivers' Fatigue: A Critical Review of the Literature and Safe System Interventions'. *Journal of Geotechnical and Transportation Engineering*, *3*(1), pp.20-24.

Albrecht, K. (2006) *Social Intelligence: The New Science If Success*. New York: Jossey Bass.

Allen, J., Piecyk, M. and Piotrowska, M. (2016) An analysis of road freight in London and Britain: Traffic, activity and sustainability*. Project Report Freight Traffic Control, 2050*. [online] Available at: http://www.ftc2050.com/reports/ westminster_road_traffic_final_Dec_2016.pdf [Accessed 26 July 2017].

Alsibai, M.H. and Manap, S.A. (2016) 'A study on driver fatigue notification systems'. *ARPN Journal of Engineering and Applied Sciences*, *11*(18), pp.10987-10992.

Amarasinghe, M., Kottegoda, S., Arachchi, A.L., Muramudalige, S., Bandara, H.D. and Azeez, A. (2015) *Cloud-based driver monitoring and vehicle diagnostic with OBD2 telematics*. [online] Available at: http://dilum.bandara.lk/wp-content/uploads/2017/04/ICTer_2015_OBD2.pdf [Accessed 7 July 2016].

Ampunan, N.D., Regmont, D.F., Rychlinski, M., Inbarajan, K., Zhang, Y. and Oesterling, C.L., Motors Liquidation Co, (2008) '*Telematics method and system'*. U.S. Patent 7,463,951.

Anderson, J.C., Arterburn, P.J., Dong, W.S., Li, C.S., Schwartz, P.L. and Zhu, J., International Business Machines Corp (2018) '*Method and Apparatus for Driver Identification Leveraging Telematics Data'.* U.S. Patent Application 15/409,817.

Armstrong, G., Kotler, P., Zepeda, A.M., Pérez, M.D.P.C., Arroyo, J.C. and Milling, H.A. (2013) *Fundamentos de Marketing*. Buenos Aires: Pearson Educación.

Armstrong, M. and Taylor, S. (2014) *Armstrong's Handbook of Human Resource Management Practice*. London: Kogan Page Publishers.

Axelrod, R.H. (1997) *The Complexity of Cooperation: Agent-Based Models of Competition and Collaboration*. Chichester: Princeton University Press.

Axelrod, R.H. and Axelrod, E.M. (2017) 'The scholar-practitioner mind-set: how texts and experience influence organizational change practice'*. Academy of Management*, 42(3), pp.561-571.

Ayuso, M., Guillen, M. and Nielsen, J.P. (2018) *Improving automobile insurance ratemaking using telematics: incorporating mileage and driver behaviour data*. [online] Available at: https://core.ac.uk/download/pdf/129948680.pdf [Accessed 12 February 2018].

Azzopardi, M. and Cortis, D., (2013) 'Implementing automotive telematics for insurance covers of fleets'. *Journal of technology management & innovation*, *8*(4), pp.59-67.

Baecke, P. and Bocca, L., (2017). 'The value of vehicle telematics data in insurance risk selection processes'. *Decision Support Systems*, *98*, pp.69-79.

Banks, T.D. (2008) *An investigation into how work-related road safety can be enhanced,* [online] Available at: https://core.ac.uk/download/pdf/10895492.
pdf [Accessed May 20 2015].

Barr, L., Popkin, S. and Howarth, H., (2009) *An evaluation of emerging driver fatigue detection measures and technologies* (No. FMCSA-RRR-09-005). United States. Federal Motor Carrier Safety Administration.

Basacik, D. and Stevens, A. (2008) Scoping study of driver distraction. *Road Safety Research Report No. 95*. London: Department for Transport.

Bass, B. M. and Stogdill, R. M. (1990) *Bass & Stogdill's Handbook of Leadership: Theory, Research, and Managerial Applications*. New York: Simon and Schuster.

Bass, B. M. and Riggio, R. E. (2006) *Transformational Leadership*. Mahwahm, NJ: Lawrence Erlbaum.

BBC News. (2007) *Europe's mixed road safety record* [online] Available at: http://news.bco.uk/1/hi/world/europe/6597743.stm [Accessed 17 November 2011].

Bennis, W. and Nanus, B., (1985). The strategies for taking charge. *Leaders, New York: Harper. Row*.

Bjugstad, K., Thach, E.C., Thompson, K.J. and Morris, A. (2006) 'A fresh look at followership'*. Journal of Behavioural and Applied Management*, 7(3), p.304.

Boeker, W. (1997) Strategic change: 'The influence of managerial characteristics and organizational growth'. *Academy of Management Journal*, 40(1), pp.152-170.

Bolman, L.G. and Deal, T.E. (2017) *Reframing Organizations: Artistry, Choice, and Leadership*. 6th Edition. New Jersey: John Wiley & Sons.

Boufous, S. and Williamson, A. (2006) *Accident Analysis & Prevention*, 38(1), pp.14-21. Florida: CRC Press.

Box, E. and Bayliss, D. (2012) *Speed Limits: A Review of Evidence.* London: RAC Foundation, [online] Available at: https://www.racfoundation.org/assets/racfoundation/content/downloadables/speed_limits-box_bayliss-aug2012.pdf [Accessed 2 December 2016].

Brake, (n.d.) *Enforcing the safety of commercial vehicles in the UK*. [online] Available at: http://www.brake.org.uk/facts-resources/15-facts/495-enforcing-the-safety-of-commercial-vehicles-in-the-uk [Accessed 16 May 2015].

Bremer, M. (2012) *Organizational Culture Change: Unleash Your Organization's Potential in Circles of 10*. Zwolle: Kikker Groep.

Brent, M. and Dent, F. (2012) *The Leader's Guide to Influence: How to Use Soft Skills to Get Hard Results*. London: Pearson.

Brodie, L., Lyndal, B. and Elias, I.J. (2009) 'Heavy vehicle driver fatalities: Learning's from fatal road crash investigations in Victoria'. *Accident Analysis & Prevention,* 41(3), pp.557-564.

Broughton, J., Baughan, C., Pearce, L., Smith, L. and Buckle, G. (2003) *Work-related road accidents,* [online] Available at: https://trl.co.uk/sites/def ault/fil es/TRL582.pdf [Accessed 3 January 2016].

Brown, I.D. (2002) A review of the 'looked but failed to see accident causation factor'*. The National Academies of Sciences, Engineering, and Medicine. Washington, D.C.* [online] Available at: https://trid.trb.org/view/734119 [Accessed 19 July 2014].

Brown, L.M. and Posner, B.Z. (2001) 'Exploring the relationship between learning and leadership'. *Leadership & Organization Development Journal,* 22(6), pp.274-280.

Buchanan, D. and Badman, R. (2008) *Power, Politics and Organisational Change Winning the Turf Game.* London: Sage.

Bugajska, J., Jędryka-Góral, A., Widerszal-Bazyl, M., Orłowska-Baranowska, E., Sagan, A., Małgorzata Michalak, J., Zużewicz, K. and Konarska, M., (2011) 'Job strain, overtime, life style, and cardiovascular risk in managers and physical workers'. *International Journal of Occupational Safety and Ergonomics*, *17*(1), pp.25-32.

Burke, J.W. ed., (1989) *Competency Based Education and Training*. London: Falmer.

Burke, R.J., Cooper, C.L. and Antoniou, A.S.G. eds., (2015) *The multi-generational and aging workforce: Challenges and opportunities*. Edward Elgar Publishing.

Cairns, S. (2007) 'Transport reviews'. *Delivering Supermarket Shopping: More or Less Traffic?* 25(1), pp.51-84.

Caldwell, S.D., Herold, D.M. and Fedor, D.B. (2004) 'Toward an understanding of the relationships among organizational change, individual differences, and changes in person-environment fit': A cross-level study. *Journal of Applied Psychology*, *89*(5), p.868.

Cameron, E. and Green, M. (2015) *Making Sense of Change Management: A Complete Guide to the Models, Tools and Techniques of Organizational Change.* London: Kogan Page.

Cameron, K.S., Sutton, R.I. and Whetten, D.A., (1988) *Readings in organizational decline: Frameworks, research, and prescriptions*. Ballinger Publishing Company.

Campling, P. and Haigh, R. eds. (1999) *Therapeutic Communities: Past, Present and Future*. Vol. 2. New Jersey: John Wiley & Sons.

Casway, T., Deszca, G. and Ingols, C. (2015) *Organizational Change: An Action-Oriented Toolkit*. Vol 2. London: Sage.

Chai, R., Naik, G.R., Nguyen, T.N., Ling, S.H., Tran, Y., Craig, A. and Nguyen, H.T. (2017) 'Driver fatigue classification with independent component by entropy rate bound minimization analysis in an EEG-based system'. *IEEE Journal of Biomedical and Health Informatics*, 21(3), pp.715-724.

Charmaz, K. (2005) 'Grounded theory in the 21st century: A qualitative method for advancing social justice research'. *Handbook of Qualitative Research, 3*, pp.507-535.

Clarke, G., Johnson, A., Nankivell, J. and Turpin, M. (2014) *Van Travel Trends in Great Britain*. London: RAC Foundation.

Cole, G.A., (2002). *Personnel and human resource management*. Cengage Learning EMEA.

Corporate Manslaughter and Corporate Homicide Act. (2007) c.1-3. London: HMSO.

Cummings, T. and Worley, C. (2008) *Organization Development and Change.* Boston: South Western Cengage Learning.

DaCoTA. (2012) Work-related road safety, deliverable 4.8v of the EC FP7 project DaCoTA. [online] Available at: http://safetyknowsys.swov.nl/Safety_issues/pdf/Work-related%20road%20safety.pdf [Accessed 29 March 2016].

Danna, K. and Griffin, R.W. (1999) 'Health and well-being in the workplace: A review and synthesis of the literature'. *Journal of Management, 25*(3), pp.357-384.

Davidson, M.J. and Olsen III, J.A., (2013) 'United Parcel Service of America Inc, '. *Systems and methods for utilizing telematics data to improve fleet management operations*. U.S. Patent 8,416,067.

Department for Transport. (2012) *Reported Road Casualties Great Britain.* London: Department for Transport.

Department for Transport. (2012) *Road Traffic Statistics.* Statistical Release. London: Department for Transport.

Department for Transport (2008) Learning to drive: The evidence*. Road Safety Research Report No. 87*. London: HMSO.

Department for Transport. (2014) *Reported Road Casualties in Great Britain: Quarterly Provisional Estimates Q2 Main.* London: Department for Transport.

Department for Transport (2008) *Road Casualties Great Britain.* London: TSO Publications.

Department for Transport (2009) *Review of UK Domestic Driving hours.* London: Department for Transport.

Dewey, J. (1931) *Philosophy and Civilisation.* London: G. P. Putnam's Sons.

Diabat, A. and Govindan, K., (2011) 'An analysis of the drivers affecting the implementation of green supply chain management'. *Resources, Conservation and Recycling*, *55*(6), pp.659-667.

Di Stasi, L.L., Renner, R., Catena, A., Cañas, J.J., Velichkovsky, B.M. and Pannasch, S., (2012) 'Towards a driver fatigue test based on the saccadic main sequence: A partial validation by subjective report data'. *Transportation research part C: emerging technologies*, *21*(1), pp.122-133.

Dingus, T.A., Guo, F., Lee, S., Antin, J.F., Perez, M., Buchanan-King, M. and Hankey, J. (2016) 'Driver crash risk factors and prevalence evaluation using naturalistic driving data'. *Proceedings of the National Academy of Sciences,* 113(10), pp.2636-2641.

Dixit, S., Thomas, P. and Agarwal, C. (2016) 'A cloud-based driver monitoring for inefficient driving behaviour using OBD2 telematics'. *International Journal of Computer Applications,* 153(9), pp.34-38.

Dooley, K.J. and Van de Ven, A.H., (1999). 'Explaining complex organizational dynamics'. *Organization Science*, *10*(3), pp.358-372.

Driver and Vehicle Services Agency (2016) *Rules on Drivers' Hours and Tachographs.* Bristol: DVSA.

Dykes, R. (2001) Reducing at-work road traffic incidents 2001*. Report to Government and the Health and Safety Commission*. Liverpool: HSE.

Eagly, A.H. and Johannesen-Schmidt, M.C. (2001) 'The leadership styles of women and men'. *Journal of Social Issues,* 57(4), pp.781-797

Eby, D.W. and Kostyniuk, L.P., (1999). 'An on-the-road comparison of in-vehicle navigation assistance systems'. *Human Factors*, *41*(2), pp.295-311.

Feilzer, M. (2015. *Privatising Probation.* Bristol: Policy Press.

Fergusson, D., Swain-Campbell, N. & Horwood, J. (2003) Risky driving behaviour in young people: prevalence, personal characteristics and traffic accidents. *Australian and New Zealand Journal of Public Health, 27*(3), 337-342. Sidney: Health and Safety Executive. [online] Available at: http://www.hse. gov.uk/cdg/,pdf/fire-ex [Accessed 13 May 2016].

Fisher, R., Ury, W. L., & Patton, B. (2011) *Getting to Yes: Negotiating Agreement Without Giving In.* London: Penguin.

Filtness, A.J. and Naweed, A. (2017) 'Causes, consequences and countermeasures to driver fatigue in the rail industry: The train driver perspective'. *Applied Ergonomics, 60*, pp.12-21. Loughborough University Institutional Repository.

Fletcher, J.K. (2004) 'The paradox of post heroic leadership: An essay on gender, power, and transformational change'. The Leadership Quarterly, 15(5), pp.647-661.

Fletcher, L., Petersson, L. and Zelinsky, A., (2005) 'Road scene monotony detection in a fatigue management driver assistance system'. In *IEEE Proceedings. Intelligent Vehicles Symposium, 2005.* (pp. 484-489). IEEE.

Fort, E., Pourcel, L., Davezies, P., Renaux, C., Chiron, M. and Charbotel, B., (2010). 'Road accidents, an occupational risk'. *Safety science*, *48*(10), pp.1412-1420.

Funkoshi, G. (1973) *The Master Text.* Tokyo: Kodansha International Ltd.

Gagné, M. and Deci, E.L., (2005). 'Self-determination theory and work motivation'. *Journal of Organizational behavior*, *26*(4), pp.331-362.

Garrison, J., (1995). 'Deweyan pragmatism and the epistemology of contemporary social constructivism'. *American Educational Research Journal*, *32*(4), pp.716-740.

Gastaldi, M.A.S.S.I.M.O., Rossi, R. and Vescovi, R., (2013). 'Analysing the capacity of a transportation network'. *A general theoretical approach.*

Gastaldi, M., Rossi, R. and Gecchele, G. (2014) 'Effects of driver task-related fatigue on driving performance'. *Procedia-Social and Behavioural Sciences, 111,* pp.955-964.

Geertz, C. (1973) *The Interpretation of Cultures.* New York: Basic Books.

Gersick, K.E., Davis, J.A., Hampton, M.M. and Lansberg, I. (1997) *Generation to Generation: Life Cycles of the Family Business.* Boston: Harvard Business Press.

Gharagozlou, F., Saraji, G.N., Mazloumi, A., Nahvi, A., Nasrabadi, A.M., Foroushani, A.R., Kheradmand, A.A., Ashouri, M. and Samavati, M. (2015) 'Detecting driver mental fatigue based on EEG alpha power changes during simulated driving'. *Iranian Journal of Public Health,* 44(12), p.1693.

Gilkey, D.P., del Puerto, C.L., Keefe, T., Bigelow, P., Herron, R., Rosecrance, J. and Chen, P., (2011). 'Comparative analysis of safety culture perceptions among homesafe managers and workers in residential construction'. *Journal of construction engineering and management*, *138*(9), pp.1044-1052.

Goetsch, D.L. and Davis, S.B. (2014) *Quality Management for Organizational Excellence*. Upper Saddle River, N.J.: Pearson.

Goffin, K. and Mitchell, R. (2016) *Innovation Management: Effective Strategy and Implementation*. London: Macmillan International Higher Education.

Goldkuhl, G. (2012) Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems,* 21(2), pp.135-146.

Golias, J., Yannis, G. and Antoniou, C., (2002) 'Classification of driver-assistance systems according to their impact on road safety and traffic efficiency'. *Transport reviews*, *22*(2), pp.179-196.

Grieves, J. (2010) *Organizational Change: Themes and Issues*. Oxford: Oxford Press.

Green, P. (2004) *Driver Distraction, Telematics Design, and Workload Managers: Safety Issues and Solutions*. SAE Technical Paper. University of Michigan Transportation Research Institute.

Grokop, L.H. and Kuhn, L.D., Tourmaline Labs Inc, (2016) *Systems and methods for collecting and transmitting telematics data from a mobile device*. U.S. Patent 9,305,317.

Guba, E. and Lincoln, S. (2016) *The Constructive Credo.* Oxford: Routledge.

Gustafsson, C. and Thurin, Å., (2015). Investigation of Business Models for Utilization of Electric Vehicles for Frequency Control.

Haack, S. ed. (2006) *Pragmatism, Old and New: Selected Writings*. New York: Prometheus Books.

Hall, A. and Barrett, L. (2007) Influence: The essence of leadership. *Neb Guide.* [online] Available at: http://extensionpublications.unl.edu/assets/pdf/g1695.pdf [Accessed 20 January 2019].

Hannagan, T. (2001) *Mastering Strategic Management*. London: Macmillan International Higher Education.

Hardy, L., Mullen, R. and Jones, G., (1996). 'Knowledge and conscious control of motor actions under stress'. *British Journal of psychology*, *87*(4), pp.621-636.

Health and Safety Executive. (2002) *Management of Work-Related Road Safety* Report RR018. London: HMSO.

Health and Safety Executive. (2014) *A Guide to Workplace Transport Safety.* London: HMSO.

Heinze, S., Gotthardt, S. and Homberg, U., (2009). 'Transformation of polarized light information in the central complex of the locust'. *Journal of Neuroscience*, *29*(38), pp.11783-11793.

Hickman, G.R. (2009) Leading Change in Multiple Contexts: Concepts and Practices in Organizational, Community, Political, Social and Global Change Settings. London: Sage.

Hickman, R., (2010). 'The art instinct: Beauty, pleasure, and human evolution'. *International Journal of Art & Design Education*, *3*(29), pp.349-350.

Husnjak, S., Peraković, D., Forenbacher, I. and Mumdziev, M. (2015) 'Telematics system in usage-based motor insurance'. *Procedia Engineering,* 100, pp.816-825.

Iles, V. and Sutherland, K. (2001) *Managing Change in the NHS: Organisational Change: A Review for Health Care Managers, Professionals and Researchers*. London: SDO. [Accessed 6 July 2016].

Iles, V. and Cranfield, S. (2004) Developing change management skills. *A Resource for Health Care Professionals and Managers.* London: SDO.

Jacko, J.A. ed., (2012). *Human computer interaction handbook: Fundamentals, evolving technologies, and emerging applications*. CRC press.

Johnson, J. (1987) *Strategic Change and the Management Process.* Oxford: Basil Blackwell.

Kanter, R. (1985) *The Change Masters: Corporate Entrepreneurs at Work* Australia: Stanley Unwin Paperbacks.

Kapoor, *et al.,* (2014) 'Yap1 activation enables bypass of oncogenic Kras addiction in pancreatic cancer'. *Cell*, 158(1), pp.185-197.

Kaplan, H. (2013) *Organizational Innovation: Studies of Program Change In Community Agencies.* New York: Kluwer Academic/Plenum Publishers.

Karolak, D. (2003) *Risk Management (Practitioners).* New Jersey: IEEE Computer Society Press.

Kasper, H. (2002) 'Culture and leadership in market-oriented service organisations'. *European Journal of Marketing*, 36(9/10), pp. 1047-1057.

Kelly, G.A., (1970) 'A brief introduction to personal construct theory'. *Perspectives in Personal Construct Theory*, pp. 1-29. New Jersey: Whiley online library.

Kezer, A. (2011) Understanding and facilitating organizational change in the 21st century: Recent research and conceptualizations*, ASHE-ERIC,* 4(155). New Jersey: John Wiley and Sons Inc.

Kimberley, J. and Miles, R. (1980) The Organizational Life Cycle: Issues in the Creation, Transformation, and Decline of Organizations. San Francisco: Jossey-Bass Inc Pub.

Kouzes, J.M., and Posner, B.Z. (1995) The Leadership Challenge: How to Keep Getting Extraordinary Things Done in Organizations. San Francisco: Jossey-Bass.

Kouzes, J.M. and Posner, B.Z. (2006) *The Leadership Challenge*. Vol. 3. New Jersey: John Wiley & Sons.

Lal, S.K. and Craig, A. (2001) 'A critical review of the psychophysiology of driver fatigue'. *Biological Psychology,* 55(3), pp.173-194. U.S. Department of Health and Human Services, Science Direct. London: Elsevier.

Lawrence, K.A., Lenk, P. and Quinn, R.E. (2009) 'Behavioural complexity in leadership: The psychometric properties of a new instrument to measure behavioural repertoire'. The Leadership Quarterly, 20(2), pp.87-102.

Lewin, K. (1939) 'Field theory and experiment in social psychology: Concepts and methods'. *American Journal of Sociology*, 44(6), pp. 868-896.

Lewis, L. (2011) *Organizational Change - Creating Change Through Strategic Communication.* Oxford: Blackwell.

Li, Z., Li, S.E., Li, R., Cheng, B. and Shi, J. (2017) 'Online detection of driver fatigue using steering wheel angles for real driving conditions'. *Sensors,* 17(3), p.495.

Lindsay, P. and Lindsay, H. (1997) *Human Information Processing: An Introduction to Psychology.* New York; London: Academic Press.

Lindsay, P.H. and Norman, D.A., (2013). '*Human information processing: An introduction to psychology'*. Academic press.

May, J.F. and Baldwin, C.L., (2009). 'Driver fatigue: The importance of identifying causal factors of fatigue when considering detection and countermeasure technologies'. *Transportation research part F: traffic psychology and behaviour*, *12*(3), pp.218-224.

Martin, J., 1992. Cultures in organizations: Three perspectives. Oxford University Press.

McGrath, R. (2013) *The End of Competitive Advantage: How to Keep your Strategy Moving as Fast as Your Business.* Boston, Massachusetts: Harvard Business Review Press.

McKernan, J., (2007). *Curriculum and imagination: Process theory, pedagogy and action research*. Routledge.

Meng, Q., Xu, L., Zhang, Y., Qian, J., Cai, M., Xin, Y., Gao, J., Xu, K., Boerma, J.T. and Barber, S.L. (2012) 'Trends in access to health services and financial protection in China between 2003 and 2011: A cross-sectional study'. *The Lancet,* 379(9818), pp. 805-814.

Merchant, K.A. and Van der Stede, W.A. (2007) *Management Control Systems: Performance Measurement, Evaluation and Incentives.* London: Pearson Education.

Merriam, S. (1988) *Case Study Research in Education.* London: Jossey-Bass.

Meyer, A.D. (1982) Adapting to environmental jolts. *Administrative Science Quarterly,* pp.515-537. New York: Cornell University.

Mikulski, J., (2012) Introduction of telematics for transport. In *2012 ELEKTRO* (pp. 336-340). IEEE

Miles, M. and Huberman, A. (1994) *Qualitative Data Analysis.* London: Sage Publications.

Miles, R.E. (1975) *Theories of Management: Implications for Organizational Behaviour and Development.* New York: McGraw-Hill.

Milgram, S. (2009) *Obedience to Authority.* New York: Harper and Row.

Mintzberg, H. (1983) *Structure in Fives: Designing Effective Organisations.* London: Prentice-Hall.

Mittal, A., Kumar, K., Dhamija, S. and Kaur, M., (2016) 'Head movement-based driver drowsiness detection: A review of state-of-art techniques'. *In 2016 IEEE International Conference on Engineering and Technology (ICETECH)* (pp. 903-908). IEEE.

Mogalakwe, M., (2006). 'From pre-colony to post-colony: continuities and discontinuities in political power relations and governance in Botswana'. *Journal of African Elections*, *5*(2), pp.5-20.

Morgan, G. (2006) *Images of Organization*. London: SAGE.

Morgan, G., (2011). 'Reflections on images of organization and its implications for organization and environment'. *Organization & Environment*, *24*(4), pp.459-478.

Murray, W., Newnam, S., Watson, B.C., Davey, J.D. and Schonfeld, C.C. (2003) *Evaluating and improving fleet safety in Australia*. Road Safety Research Grant Report. Queensland University of Technology.

Myers, P., Hulks, S. and Wiggins, L. (2012) *Organizational Change: Perspectives on Theory and Practice.* Oxford Press.

Nilsson, L., Harms, L. and Peters, B., (2001) 'The effect of road transport telematics'. In *Traffic psychology today* (pp. 265-285). Springer, Boston, MA.

O'Reilly, K. (2005) *Ethnographic Methods.* Oxford: Routledge.

Otmani, S., Pebayle, T., Roge, J. and Muzet, A., (2005) 'Effect of driving duration and partial sleep deprivation on subsequent alertness and performance of car drivers'. *Physiology & behaviour*, 84(5), pp.715-724.

Owen, N., King, H. and Lamb, M., (2015) 'Literature review of race driver fatigue measurement in endurance motorsport'. *Procedia Engineering*, *112*, pp.344-348.

Pettigrew, A.M., (1985b) Contextualist research and the study of organizational change processes. [online] Available at: https://ifipwg82.org/sites/ifipwg82.org/files/Pettigrew.pdf [Accessed 9 May 2017].

Pettigrew, A.M. (1985) 'Contextualist research and the study of organizational change processes'*. Research Methods in Information Systems, 1*, pp.53-78.

Pettigrew, A. Ferlie, E. and McKee, L. (1992) *Shaping Strategic Change*. London: Sage Publications.

Pettigrew, A. and Whipp, R. (1993) *Managing Change for Competitive Success*. New Jersey: Wiley-Blackwell.

Pettigrew, A. and Whipp, R., (1991). Managing Change for Strategic Success. Wiley-Blackwell.

Pfeffer, J. (1992) *Managing with Power: Politics and Influence in Organizations.* Massachusetts: Harvard Business Press.

Pfeffer, J. (1994) 'Competitive advantage through people found'. *California Management Review, 36*(2), p.9.

Phillips, R.O., (2015) 'A review of definitions of fatigue–And a step towards a whole definition'. *Transportation research part F: traffic psychology and behaviour*, *29*, pp.48-56.

Platt, J. (1981) 'Evidence and proof in documentary research 2: some shared problems of documentary research'. *The Sociological Review,* 29(1), pp.53-66. London: Sage.

Poole, M.S., Van de Ven, A.H., Dooley, K. and Holmes, M.E., (2000) *Organizational change and innovation processes: Theory and methods for research*. Oxford University Press.

Prior, L. (2003) *Using Documents in Social Research.* London: Sage Publications.

Quinn, D., (1997). 'The correlates of change in international financial regulation'. *American Political science review*, *91*(3), pp.531-551.

Rainer, A. (2011) 'The longitudinal, chronological case study research strategy: a definition, and an example from IBM Hursley Park'. *Information and Software Technology,* 53(7), pp.730-746.

Reck, A.J., (1984) 'The influence of William James on John Dewey in psychology'. *Transactions of the Charles S. Peirce Society*, *20*(2), pp.87-117.

Reason, J., Manstead, T., Stradling, S., Parker, D., Meadows, M., Lawton, R., Baxter, J., Lajunen, T., Senior, V., Adams, J. and Beatty, S., (2001) *Influencing Driver Attitudes and Behaviour*. London: Department for Transport.

Robert, M. (2006) *The New Strategic Thinking: Pure & Simple.* New York: McGraw-Hill.

Rodriguez, D.A., Targa, F. and Belzer, M.H. (2006) 'Pay incentives and truck driver safety: a case study'. *ILR Review,* 59(2), pp.205-225

Rogers, E. and Kincaid, L. (1981) *Communication Networks: Toward a New Paradigm for Research*. New York: Collier Macmillan.

Rogers, E. (2003) *Diffusion of Innovations.* New York: Free Press.

Rogers, E.M. and Williams, D., (1983). Diffusion of. *Innovations (Glencoe, IL: The Free Press, 1962)*.

Rogers, E.M., (2010). *Diffusion of innovations*. Simon and Schuster.

Sarros, J.C. and Santora, J.C. (2001) 'The transformational-transactional leadership model in practice'. Leadership & Organization Development Journal, 22(8), pp.383-394.

Schein, E. (1985) *Organizational Culture and Leadership*. London: Jossey-Bass.

Schon, D. (1991) *The Reflective Practitioner: How Professionals Think in Action* Farnham, Surrey: Ashgate.

Scott, W.R. (2015) Organizations and Organizing: Rational, Natural and Open Systems Perspectives. Oxford: Routledge.

Seidman, I. (1991) *Interviewing as Qualitative Research: A Guide for Researchers in Education and Social Sciences.* New York: Teachers Press.

Senge, P., (1990). Peter Senge and the learning organization. *Rcuperado de*.

Senge, P. (2006) *The Fifth Discipline: The Art and Practice of the Learning Organisation.* New York: Random House Business Books.

Senior, B. and Swailes, S. (2012) *Organisational Change.* London: Pearson Education Ltd.

Serrat, O. (2017) 'Harnessing creativity and innovation in the workplace'. *Knowledge Solutions*, pp.903-910.

Shi, S.Y., Tang, W.Z. and Wang, Y.Y., (2017) 'A review on fatigue driving detection'. In *ITM Web of Conferences* (Vol. 12, p. 01019). EDP Sciences.

Smith, R. (2016) Organisational Learning. Oxford: Routledge.

Spady, W.G., (1978). 'The concept and implications of competency-based education'. *Educational Leadership*, *36*(1), pp.16-22.

Stalvey, B.T., Owsley, C., Stalvey, B.T. and Owsley, C., (2000). 'Self-perceptions and current practices of high-risk older drivers: Implications for driver safety interventions'. *Journal of Health Psychology*, *5*(4), pp.441-456.

Strahan, C., Watson, B. and Lennonb, A. (2008) 'Can organisational safety climate and occupational stress predict work-related driver fatigue'? *Traffic Psychology and Behaviour*, 11(6), pp.418-426.

Stocking, G. W. (1983) *The Ethnographer's Magic: Fieldwork in British Anthropology from Tylor to Malinowski.* Madison: University of Wisconsin Press.

Stutts, J.C., Reinfurt, D.W., Staplin, L. and Rodgman, E., (2001). The role of driver distraction in traffic crashes.

Stutts, J.C., Wilkins, J.W., Osberg, J.S. and Vaughn, B.V., (2003) 'Driver risk factors for sleep-related crashes'*. Accident Analysis & Prevention,* 35(3), pp.321-331.

Tashakkori, A. and Teddlie, C. (2001) *Handbook of Mixed Methods in Social Behavioural Research.* London: Cassell.

Taubman-Ben-Ari, O., Mikulincer, M. and Gillath, O., (2004) 'The multidimensional driving style inventory scale construct and validation'. *Accident Analysis & Prevention*, 36(3), pp.323-332.

The Road Vehicles (Construction and Use) Regulations Act. (1986) c. 1-7. London: HMSO.

Thiffault, P. and Bergeron, J., (2003) 'Monotony of road environment and driver fatigue: a simulator study'. *Accident Analysis & Prevention,* 35(3), pp.381-391.

Todnem, R. (2013) 'Organizational Change, Leadership and Ethics': *Leading Organizations towards Sustainability*. Oxford: Routledge.

Tomasko, R.M., (1987). *Downsizing: Reshaping the corporation for the future*. AMACOM/American Management Association.

Transport Act. (1968) s.95 (4), c.1-9. London: HMSO.

Vakati, K. (2015) *Driver telematics analysis.* [online] Available at: https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?referer=https://www.google.co.uk/&httpsredir=1&article=1394&context=etd_projects [Accessed 28 June 2016].

Valerio, D., Ricciato, F., Belanovic, P. and Zemen, T., (2008) May. 'UMTS on the road: Broadcasting intelligent road safety information via MBMS'. *In VTC Spring 2008-IEEE Vehicular Technology Conference* (pp. 3026-3030). IEEE.

Van Der Laan, J.D., Heino, A. and De Waard, D. (1997) 'A simple procedure for the assessment of acceptance of advanced transport telematics'. *Transportation Research. Part C, Emerging technologies,* 5(1), pp.1-10.

Van de Ven, H., (1993). 'The development of an infrastructure for entrepreneurship'. *Journal of Business venturing*, *8*(3), pp.211-230.

Van de Ven, A.H., & Huber, G. P. (1990) 'Longitudinal field research methods for studying processes of organizational change'. *Organization Science,* 1(3), pp. 213-19.

Van de Ven, A.H., (2017) 'The innovation journey: you can't control it, but you can learn to maneuver it'. *Innovation*, *19*(1), pp.39-42.

Van de Ven, A.H. and Rogers, E.M. (1988) 'Innovations and organizations: Critical perspectives'. *Communication Research,* 15(5), pp.632-651.

Van de Ven, A.H. (2007) *Engaged Scholarship: A Guide for Organizational and Social Research.* Oxford: Oxford University Press on Demand.

Van de Ven, A.H., Poole, M.S., Dooley, K. and Holmes, M.E., (2000) Organizational Change and Innovation Processes: Theory and Methods for Research. Oxford: Oxford University Press.

Van de Ven, A.H., (1993) 'The development of an infrastructure for entrepreneurship'. *Journal of Business venturing*, *8*(3), pp.211-230.

Vincent L. Barker III and Irene M. Duhaime (Jan., 1997), *Strategic Management Journal Vol. 18*, No. 1 pp. 13-38 Wiley

Wahlström, J., Skog, I. and Händel, P. (2015) 'Driving behaviour analysis for smartphone-based insurance telematics'. *Proceedings of the 2nd Workshop on Physical Analytics*, [e-journal] pp. 19-24.10.1145/2753497.2753535.

Walker, S., Richardson, D.S. and Green, L.R., (2000) 'Aggression among older adults: The relationship of interaction networks and gender role to direct and indirect responses'. *Aggressive Behaviour: Official Journal of the International Society for Research on Aggression*, 26(2), pp.145-154.

Walton, H., Dajnak, D., Beevers, S., Williams, M., Watkiss, P. and Hunt, A. (2015) Understanding the health impacts of air pollution in London. *Kings College London, Transport for London and the Greater London Authority*. [online] Available at:https://www.london.gov.uk/sites/default/files/hianlondonkingsreport_14072015_final.pdf [Accessed 26 July 2016].

Wang, J.S., Knipling, R.R. and Goodman, M.J., (1996) 'The role of driver inattention in crashes: New statistics from the 1995 Crashworthiness Data System'. In *40th annual proceedings of the Association for the Advancement of Automotive Medicine* Vol. 377, p. 392.

Wegman, F., (1996) *Road* accidents: worldwide *a problem that can be tackled successfully* (No. 13.01. B).

White, H. and Sabarwal, S. (2014) 'Quasi-Experimental Design and Methods': *Methodological Briefs-Impact Evaluation* No. 8. New York: UNICEF.

Wolińska, W., Tatol, P., Zdziarski, K., Karpeta-Pawlak, I. and Mroczek, B. (2017) 'Occurrence of insomnia and daytime somnolence among professional drivers'. *Family Medicine & Primary Care Review*, (3), pp.277-282.

Wylie, C.D., Shultz, T., Mitler, M.M. and Mackie, R.R., (1996) 'Commercial motor vehicle driver fatigue and alertness study'*: Technical summary* (No. FHWA-MC-97-001).

Yin, A. and Nie, S., (1993) 'An indentation model for the North and South China collision and the development of the Tan-Lu and Honam fault systems, eastern Asia'. *Tectonics*, 12(4), pp.801-813.

Yazan, B., (2015). 'Three approaches to case study methods in education: Yin, Merriam, and Stake'. *The qualitative report*, *20*(2), pp.134-152.

Yin, K. (2009) *Case Study Research, Design and Methods.* London: Sage.

Zhang, C., Wang, H. and Fu, R. (2014) 'Automated detection of driver fatigue based on entropy and complexity measures'*. IEEE Transactions on Intelligent Transportation Systems*, 15(1), pp.168-177.

Zużewicz, K., Saulewicz, A., Konarska, M. and Kaczorowski, Z., (2011). 'Heart rate variability and motion sickness during forklift simulator driving'. *International Journal of Occupational Safety and Ergonomics*, *17*(4), pp.403-410.